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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*On the Treatment of Fractures of the Femur.* By PHILIP BEVAN, M.D. T.C.D., F.R.C.S.I., M.R.I.A., Surgeon to Mercer's Hospital, Lecturer on Surgery in the Dublin School of Medicine, &c.

WHEN we recollect that one variety of fracture of the femur terminates almost invariably in the formation of a false joint, together with permanent lameness and shortening of the limb, and that in many other cases, notwithstanding great care and attention, shortening and eversion sometimes occur[a]; it cannot be a matter of surprise that a new apparatus should be proposed, with the view of improving our modes of treatment. It may be said that fracture of the femur can be treated successfully by the plans at present in use, and this is, no doubt, true in many

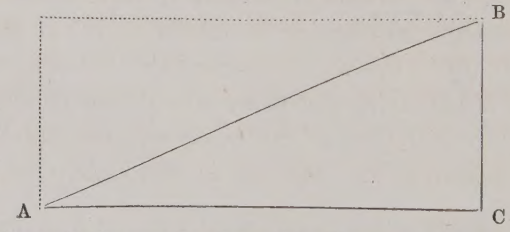
[a] See a case lately published in the Lancet, where an eminent surgeon congratulates himself on curing a case in which the limb remained one inch shorter, and curved outwards. November 23, 1850.

cases, but it is equally true that some deformity frequently results, especially in cases of oblique fracture, and in those situated near the joints. Indeed, Chelius says that fracture of the thigh is most commonly attended with deformity and shortening. There are two positions adopted for treating these fractures,—the flexed and the straight. It is not my intention to dwell on the former, as the advantages which the latter possesses over it have been completely proved in the able treatise published in this Journal by the late Dr. Houston[a], and the flexed position, whether on the outside or on the double inclined plane, is, I believe, rarely adopted at present, except in a few cases, such as in fracture below the trochanter minor.

The different forms of apparatus for keeping up the extended position may all be considered as modifications or improvements of Dessault's splint, and are all liable to serious objections. In the first place, counter-extension is made by a bandage extending, with different degrees of obliquity, around the groin to the outside of the pelvis. Hence, owing to the obliquity of the direction of the force, there is a considerable loss of power[b], and thus, a greater pressure is made on the perineum and groin than would be required if the force were

[a] First Series, vol. viii. p. 459.

[b] The line AB, which represents the perineal bandage, is equal in force and direction to the two lines AC and BC, and as the force applied in the direction AC can have no effect in keeping up extension and is therefore lost, it is obvious that



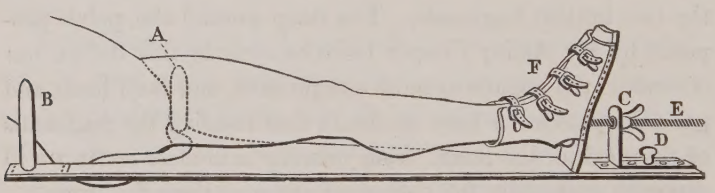
a force equal to, and in the same direction as BC, will have as much effect in keeping up extension as AB. Thus the saving of power will be one-half or one-third, according to the degree of obliquity of the direction of the bandage.

applied in a direct line. The amount of loss will vary with the obliquity, but it must be considerable in any arrangement. The pressure frequently causes excoriation and even ulceration of the fold of the thigh, or the patient, to relieve himself from the pain occasioned by it, loosens the bandage, and thus either delays or altogether prevents union. Secondly, the counter-extension is made by a yielding texture, which requires to be replaced or tightened several times during the progress of the case, thus disturbing the partially formed callus. Thirdly, the perineal bandage tends, in fracture of the neck of the bone, to separate the portion attached to the head from that connected with the shaft, and thus to keep at a distance the two broken fragments. The strap around the pelvis proposed by Sir Astley Cooper tends to remedy this defect, but it renders the apparatus more complicated, and both heats and galls the patient. I have no doubt that keeping the fragments of the neck of the femur from coming into close contact will diminish materially the chance of union in these fractures.

The mode of making extension in Dessault's and in Liston's splints is liable to equal objections. First, the force is applied obliquely, and therefore there is a loss of power; and secondly, it has great tendency to increase or keep up the rotation outwards of the limb, which this fracture usually produces. No doubt Boyer's mode of extension is a great improvement in this respect, but his screw is rather expensive and complicated. All the previous inventions require that the patient should lie on a perfectly resisting bed. This, in private, is of little importance, as we can use a hair mattress; but in hospital, to lie on the hard straw mattress for six or eight weeks is by no means a trifling evil, and, in old persons, is either absolutely impossible, or very liable to cause excoriation or sloughing of the sacrum.

I propose a single, broad, strong splint under the entire limb, concave, and padded at the upper part, to pass below the tuber ischii. One perpendicular, strong bar of iron, well pad-

ded, rises from the inner border, and is intended to rest against the ramus of the pubis, whilst another similar, but longer bar, is placed also perpendicularly on a level with the spine of the ilium, on the outside of the splint. To the lower part of the splint a moveable perpendicular iron plate is attached by means of a thumb-screw. This plate is perforated in the centre, and through it an endless screw passes, to which a foot-board and shoe, well padded, are attached. The perpendicular plate is merely united to the splint by a screw, which can be fixed at varying lengths, so as to adapt it to the various size of the thigh at different ages; and also to allow, if necessary, all traction on the limb to be relaxed instantaneously, should circumstances require it[a].



The counter-extension is here made partly by the perpendicular iron pressing against the pubis, and partly by the edge of the splint pressing against the tuber ischii. I at first feared that the pubis would be galled; but as the principal pressure is against the ischium, the friction is so slight on this part as not to give the slightest inconvenience. The perpendicular iron at the spine of the ilium is of use, in supporting the pillows, and fixing one which should always be placed under the trochanter major, to keep it in contact with the neck of the bone, and pre-

[a] A represents a perpendicular perineal plate, well padded, and covered with chamois leather.

B, a similar one, placed opposite the spine of the ilium.

C, a moveable perpendicular plate, attached to the splint by a thumb-screw D, and capable of being moved, according to the length of the limb.

E, an endless screw, which is attached above to the foot-board of the boot, passes through an opening in the perpendicular plate, and can, by means of a nut placed below the plate, draw the foot-board down.

vent it from falling backwards behind its natural site. I originally intended that this should press against the spine of the ilium, but the varying breadth of the pelvis rendered this difficult; and I found that pressure against the pubis and tuber ischii was quite sufficient without it.

The extension is made by the screw below, which is attached to an iron foot-board, and this may either be connected to the foot by a boot or a figure of 8 bandage, or, what answers better, by a circular bandage applied around the ankle, above the malleoli, with a strong band to connect it to the foot-board.

It might be supposed that this extension would gall the ankle, but the force required to keep up the extension, when applied thus in a right line, is so slight, that little or no inconvenience results.

I need scarcely say how simple is the mode of adjusting this apparatus; in fact, having applied a bandage the entire length of the limb, the patient has merely to lie down on the splint, previously covered with a long pillow, with the pubis resting against the perineal plate, when, the extending bandage being applied, the ankle bound to the foot-board, and the screw tightened, the entire is complete. In a few cases of children, or unruly persons, a bandage to prevent the patient rising altogether off the splint might be required, but will rarely be necessary. A pad or pillow should be placed under the trochanter major to support it, keep it in contact with the neck of the bone, and assist in preventing rotation outwards.

The advantages which this apparatus presents are, I believe, numerous. 1st, It is remarkably simple. 2nd, The extension, or counter-extension, is made perpendicularly, and not obliquely, and, therefore, a much less amount of force is required than by any other apparatus, no power being lost. 3rd, No pressure is made on the front of the thigh. 4th, The extension can be made very gradually. For the first few days, the limb may be left rather shorter than natural, and then it may be gradually lengthened by merely tightening the screw, with-

out (as is necessary in Dessault's or Liston's splints) deranging or removing any other part of the apparatus. 5th. The entire limb is exposed to view, and should the fracture be compound, the tails may be removed without raising the limb, or diminishing the extension, and any shortening or deformity is immediately detected, which is not the case where the limb is surrounded by two or more splints, retained by bandages. 6th. As the extension is applied in a direct line, eversion of the foot is entirely prevented. 7th. The extension may be made above the malleoli, so as not to interfere with either the dorsum of the foot or the ankle. The traction on the ankle is a well-known evil, and has sometimes given rise to a relaxation of the joint, requiring several weeks for its removal. This mode of making extension is much better than that proposed by Mr. Bulley, in the form of a circular band around the thigh, above the patella; but in fact, after the first few days, the amount of traction is so slight, when used in the proper perpendicular direction as with this apparatus, that no injury can be done to any of the joints. And lastly, the counter-extension is principally made against the unyielding tuber ischii, a part well covered with a cushion of fat, and accustomed to pressure; the perineal plate, resting against the ramus of the pubis, sustains comparatively little pressure, and is of use chiefly in keeping the apparatus from slipping outwards.

On first applying this splint, my patient suffered considerably from the traction on the ankle; but I afterwards found that this arose from using a degree of extension quite unnecessary. In fact, the muscles become partially paralysed by the gradual and slow traction, and after the first few days, the slightest force was sufficient to keep the limb to its normal length.

The splint will be invaluable in military practice, where a firm support under the limb is of so much importance; and in fractures of the condyles of the femur or tibia it will be equally useful; for whilst the extension is fully kept up, the knee-joint

will be exposed to view, and this in a position favourable for the application of leeches or other treatment.

Cases of fracture of the neck of the femur within the capsule, when they occur in very old or debilitated persons, are best treated by Sir Astley Cooper's method, as, no doubt, any attempt to keep such patients for a length of time on their backs by any apparatus, however simple, must be followed by sloughing of the nates, irritative fever, and probably the death of the patient. But when this fracture occurs in younger and less debilitated subjects, I have some reason to hope that the occurrence of false joint will be obviated by the use of this apparatus, as two of the most usual causes of disunion, the too frequent motion, and the want of close contact of the fragments, will be hereby avoided.

That the too free motion will prevent union scarcely requires proof, and that the want of close contact of the fragments will equally prevent it is nearly as evident. Thus in fracture of the patella and of the olecranon, the want of contact alone would seem to prevent bony union, as there is no deficient vascularity of the parts, and bony deposits take place readily when the parts are in contact in longitudinal fracture of the same bones.

The following cases illustrate the use of this apparatus:

Luke Reilley, a healthy carman, aged 31, was admitted into Mercer's Hospital on 30th of August, under Dr. Jameson's care. He could give no accurate account of how the accident under which he laboured occurred, or whether it arose from direct or indirect violence. The thigh, at the upper part, was considerably swollen; he suffered intense pain, especially on any attempt being made to move the limb; the toes were very slightly everted, and there was scarcely any shortening; he could not lift the limb at all, but could invert and evert the foot imperfectly. Dr. Jameson thought he felt an obscure crepitation, but, being prevented from making an accurate examination, owing to the pain felt by the patient and the spasm of the

muscles, he was not perfectly satisfied of the existence of a fracture; stuping was therefore ordered, and an aperient at night.

On the 1st September he came under my care; the symptoms were as on the former day; the bowels had been opened. The same pain and spasm were present. I ordered him to be cupped to twelve ounces, and to take a diaphoretic mixture, with an opiate at night.

On the 2nd he was much relieved by the bleeding, but still there was extreme pain on moving the limb.

On careful measurement the limb was not more than the eighth of an inch shortened; the toes still very slightly everted, and he could not raise the foot from the bed. The pain he suffered was still so intense, that on attempting to discover a crepitation I was obliged to desist. I ordered him to be again cupped, and to be well stuped.

On the 3rd, on visiting him in the morning, I was surprised to find that the limb was at least one inch and an eighth shorter, and that the toes were much more everted. The pain was much relieved by the cupping; and on making extension, a crepitation was felt most distinctly. On making inquiries as to the cause of the shortening, I discovered that, during the temporary abscence of the nurse (of course contrary to directions), he had made his way across the ward during the night, to get to the night-chair, having a great antipathy to the use of the bed-pan. At first he tried to place the foot on the ground, but finding that this was impossible he was supported by two of the other patients, and hopped across the room. On getting into the bed afterwards he felt severe pain in the hip.

On the 5th instant I applied the splint: the extension was at first made on the instep by a figure of 8 bandage. He complained of considerable pain across the dorsum of the foot at night, although there was little or none during the day, and the screw was loosened during the night; but he never for a moment suffered any pain or galling in the groin or perineum.

The many-tailed bandage was applied along the entire limb to diminish the pain and help to remove the swelling. The limb was of its full length, and not the slightest tendency to eversion could be perceived.

On the 10th, finding that the instep still gave him uneasiness, having *first put a roller round the foot to prevent œdema*, I applied a circular bandage above the malleoli, and to this I attached side-pieces, which firmly connected it to the foot-piece of the splint, and then tightened the screw.

On the following morning I found that he still complained of pain above the instep, which was immediately relieved by relaxing the screw a good deal, and I now discovered that we had been using an unnecessary degree of extension, for even with the relaxed state of the screw, the limb retained its perfect length. From this day he made no complaint of the instrument, except occasionally, when the pillows under the limb required to be replaced, or when the pad which filled the hollow between the heel and the calf of the leg was displaced, and allowed the heel to rest too much on the pillow.

On the 15th all swelling having subsided, I removed the bandage as being no longer necessary.

On the 30th September I examined the limb, and found that he could slightly raise it from the pillow; it had its full length, and there was not the least rotation. The slightest possible extension was continued, which gave him no uneasiness. It would be quite unnecessary to dwell further on the progress of this case; he left the hospital with a most perfect limb on the 14th of October.

James Gill, aged eight years, a fine, healthy boy, residing in Sandford, whilst playing with some boys, was thrown down, but could not accurately say how he fell. Being unable to rise, he was carried home, and from thence brought into Dublin, to Mercer's Hospital. On examination, the left femur was found to be dislocated into the ischiatic notch; it was rotated inwards,

and the great toe rested on that of the opposite side; the thigh was slightly flexed, so that the amount of shortening could not be accurately ascertained. The limb was nearly fixed, admitting only of slight flexion and adduction, but not permitting either extension or abduction. The head of the bone could be felt very indistinctly in the sciatic notch, the buttock was flattened, and its fold nearly obliterated. Extension was made obliquely, in the usual direction, for a few minutes, and the bone went into the acetabulum with a snap, and very little difficulty. He was placed in bed, with the knees tied together, and pillows under the hams. For a few days he complained only of slight pain and soreness, which, being attributed to inflammation consequent on the accident, were treated by the application of a few leeches and stuping. On removing the pillows, however, it was found that the limb was slightly rotated inwards, and a little shorter; that it could neither be abducted nor rotated outwards; in fact, although the symptoms were not so well marked as before, it was apparent that the head of the femur had again slipped from the acetabulum. On making very moderate extension it was reduced, and the knees were carefully bandaged, but on the following day it was found to have again escaped from its position. On making extension, it was now also easily replaced, but it immediately slipped out and generally with a jerk, which proved that its displacement did not arise from a fracture of the brim of the acetabulum. Liston's splint was then applied to the limb, with the hope of keeping it *in situ*, but with no better result, and after several ineffectual attempts it was finally discontinued, in consequence of the perineal bandage having excoriated the inner surface of the fold of the thigh, although it had been carefully padded, and applied with the greatest attention. Not having a splint of the proper size for a child, and not wishing to leave the bone longer unreduced, on the 2nd of December I applied the apparatus made for an adult, although I feared that the large size of the perineal plate would interfere with the urethra, by extending too

far over the medial line of the perineum. This, however, did not take place, and the child did not complain unless when pressure was made behind the trochanter, or when the limb was moved for the sake of ascertaining whether it had retained its normal position or not. The excoriations healed rapidly, and the head of the bone has not even once slipped from the acetabulum since the application of the apparatus.

This case, sufficiently interesting in itself, speaks much in favour of the splint, as the small size of the perineum, when compared with the large size of an instrument intended for an adult, the previous excoriation caused by the former apparatus, the early age of the child, and the facility with which the bone slipped from the acetabulum on the slightest motion, all rendered it peculiarly difficult of management.

Art. II.—*On the Use of Galvanism in Obstetric Practice.* By John Hyde Houghton, M. R. C. S. L., one of the Surgeons to the Dispensary, Dudley.

In the present state of our knowledge on the subject, it is a matter of deep interest and of considerable importance to determine the power which galvanism possesses of exciting or increasing the action of the uterus, and of arresting hemorrhage from that organ during pregnancy or labour. Few, as yet, have recorded their experience on this point, and our knowledge of the subject is meagre and unsatisfactory. Those who have published their cases (with one exception, Dr. Simpson) speak in unvarying terms as to its powers, and would lead us to look to it with confidence in some of the most trying difficulties to which we are exposed in obstetric practice.

Dr. Simpson, on the contrary, seems altogether to doubt its powers, and after having recorded eight cases, the results of which are given below, he proceeds to say: "It would be hasty, and logically incorrect, to deduce from the preceding experiments

that under no modification and under no manner of application does galvanism possess the power of directly exciting or increasing the contractile action of the uterus. Forms and methods of employing it may possibly be detected or devised, affording a different result. But I believe I am justified in inferring from the preceding inquiry that, as employed at the present time, and in its present mode, it is not a means which can in any degree be relied upon for the purpose in question, and is so far practically and entirely useless as a stimulant of the parturient action of the uterus.

"In stating the above conclusions as the result of my own experience, I by no means wish to impugn the validity of the observations made in one or two isolated cases by others in which an opposite result was supposed to be produced. Uterine contractions may certainly have been occasionally increased *while* the galvanism was being used; but I strongly question whether that increase was the result of galvanic agency." Farther on he observes: "Uterine action may be modified by the state of the patient's mind, or by other more unappreciable conditions, by the application of cold or mere mechanical irritation of the vagina or cervix uteri." "The use of *so portentous an apparatus* as the galvanic machine may influence the uterus through the mind of the patient." "The application to the skin of a wet sponge attached to the external conducting wire may excite uterine contraction by reflex action, on the same principle as cold thus used very generally leads to this effect both during and after labour; and lastly and principally, the mere introduction and mechanical irritation of the vaginal conductor upon the surface of the vagina and cervix uteri will, I doubt not, occasionally excite more strong and powerful uterine pains, in the same way and on the same principle as the mechanical irritation of the finger or the forceps certainly sometimes produces the same consequences."

Dr. Radford, of Manchester, holds a very opposite opinion

to that just expressed, speaking highly and positively of its powers over the action of the uterus; and in this view he is supported by most of those who have recorded their experience on the subject. Referring to a case of hemorrhage at the eighth month, he says: "the circle was now completed, and the woman complained that I was cutting her. The moment the circle was completed, uterine pains were excited, and a bearing-down effect produced; the effect was observed to be more or less intense according to the length of time the conductors were allowed to remain applied." "The uterus was felt to be *tonically contracted during the intervals*, and this effect was increased after each temporary action induced by the application of the connecting-rod." And again he observes: "It is in such cases as these that we may with *such certainty of success* bring into use that powerful agent, galvanism."

Having these two deservedly trustworthy authorities so completely at variance on a subject of such importance, it seems to me to be the duty of every one to contribute his mite to our common stock of knowledge, that, from an aggregate of carefully recorded observations, some positive conclusions may be deduced. It is in this spirit, and in the hope of calling attention to an agent which is little used in midwifery, but which, I firmly believe, possesses vast powers as an exciter of uterine contraction, that the following cases and observations are offered.

Case I.—Mrs. M. aged 28, a small, delicate, anemic-looking person, is now, July 13, 1847, at the full term of her eighth pregnancy. I saw her at 7, A. M.; she has had premonitory pains for a day or two, but they are now regular and tolerably strong every three or four minutes; the os uteri is three-fourths dilated; membranes entire, soft parts lax and well lubricated; head just descending through the brim. Pain continued regular, with little progress, until eight o'clock, when I ruptured the membranes. The pains then gradually diminished in force and frequency, and at a quarter-past eight had quite left her. Three doses of

ergot of rye[a], stimulants, bandage, and frictions failed to produce the slightest pains; the head had descended into the hollow of the pelvis. I waited until half-past eleven o'clock, when she became very anxious about herself, and begged I would, if possible, hasten the delivery. I therefore sent for the galvanic apparatus[b], and at twelve o'clock commenced its administration by applying a very feeble current; one pole being placed in the vagina, the other on the abdominal wall; she immediately cried out "Oh! you are running a pin into me." After three or four minutes she had a very slight pain, and after three or four minutes more one stronger; the pains continued increasing in force and frequency for about twenty minutes, when she was delivered of a small, but healthy child.

The pains produced by the galvanism exactly resembled those of natural labour; and, but for the presence of the apparatus, one would have said she was completing her labour in a natural and favourable manner. The poles were *kept constantly applied.* The uterus soon contracted firmly, and expelled the placenta. The mother and child did quite well.

Previously to her present pregnancy, Mrs. M. had several abortions from ulceration of the cervix uteri, which had yielded to the usual treatment. From this time she enjoyed better health than she had done for years. She got stout, lost her anemic look, and remained quite free from uterine symptoms, which had long troubled her.

Case II.—On the 2nd of July, 1848, at 4, A.M., she was again in labour at her full time. I was prevented from attending her myself; and she was attended by Mr. W. W. Tinsley, now of the Sheffield General Infirmary, whom I acquainted with the facts of her previous labour. The following is that gentleman's ac-

[a] The ergot was administered thus: one drachm of the powder was boiled for five minutes in half a pint of water, and one-third part of the decoction given every quarter of an hour.

[b] In the cases recorded I used one of Horne and Thornethwaite's electro-magnetic machines, in which the contact was broken by the vibrating-bar.

count of the labour, slightly condensed: "She had been in pain all night, and the pains now came on every five minutes, not strong, and sometimes not quite so often. The membranes were ruptured before I saw her; soft parts relaxed, cool, and moist; os uteri high up, soft, and dilatable, but little dilated; head presenting in the first cranial position. In an hour, little progress being made in the dilatation or descent of the head, I gave her a dose of ergot of rye, which only produced vomiting; in another hour she seemed much the same; and with my hand on the abdomen I could feel that the uterus did not contract with the pains, which continued gradually decreasing, although they never left her entirely. The bandage, friction, &c., were now tried without effect. This state continuing, as I knew that galvanism had been used with effect before, it was again applied. An assistant placed one pole over the fundus on the abdominal wall, and I applied the other at the outlet of the vagina, at the same time watching the progress of the head. At first we could not regulate the power, but at length we got a *continuous stream*, which was gradually increased as far as she could bear, for that only seemed sufficient to produce contraction. In less than ten minutes she complained of the pains getting stronger, and indeed the effect was obvious, for the pains soon became expulsive; the head began to advance, and in about a quarter of an hour made its appearance at the outlet. The poles were now removed, and a natural pain was sufficient to expel the head, and soon afterwards the body. The placenta came away in a few minutes, and the uterus contracted firmly. Her convalescence was quite favourable. During the progress I sometimes moved the pole from the vagina to the sacrum, but the effect seemed to be the same. The chief pain was caused by the pole over the fundus. The galvanism did not seem to produce natural alternating pains, but rather one gradually increasing contraction, which hardly left her until the child was born. The time which elapsed

from the first application of the poles until the birth of the child did not exceed one quarter of an hour."

Case III.—Mrs. I. was taken in labour September 5, 1847. I saw her at half-past nine, P. M., when I found the os uteri dilated to the size of half-a-crown, soft and dilatable; head presenting naturally; pains regular, but feeble; the pains continued frequent and feeble until half-past one, at which time the child was born. As the head was passing the outlet a copious gush of blood took place, and blood continued to flow *violently* after the birth of the child. I at once removed the placenta without difficulty; the flooding, however, continued; pressure with the hand caused the uterus to contract, by which the bleeding was *restrained;* a slight drain still continued; at times the uterus relaxed under the hand, when the bleeding immediately returned. Shortly an alarming gush took place, followed by pallor, restlessness, vomiting, and fainting; ordinary means had been already tried, and now cold water was *dashed* freely on the abdomen, without producing any permanent effect. The uterus *would not contract effectually*, and the bleeding continued. I now sent for the galvanic apparatus, and during three-quarters of an hour which elapsed until its arrival, I kept firm pressure on the uterus with my own hands, by which means the flooding was restrained. The organ, however, showed a *constant disposition to relax*, and consequently *the bleeding to return.* The state of the patient had become very alarming; the poles were applied without delay; and they soon produced *firm and permanent contraction, and complete suppression of the bleeding.* For a short time I kept my own hand firmly on the uterus, that no unobserved relaxation and internal flooding might occur. Shortly afterwards I desired an assistant (who had much midwifery experience) to feel if the contraction continued; the moment he placed his hand on the abdomen, he looked quite astonished, and said he had never felt so firm a uterus. Her recovery was gradual, and without accident or

drawback, more than that which resulted from loss of blood. I have since attended her in an easy and natural labour, in which there was no accident or complication.

Case IV.—Mrs. Williams, aged 31, May 8, 1851. *Primipara.* A small, delicate, pale, and apathetic-looking woman; has suffered much from acidity and stomach derangements during her pregnancy. Pain commenced this morning at two o'clock; I saw her at nine o'clock, when I found the pains slight, but recurring every quarter of an hour; os fully dilated; natural presentation; membranes protruding slightly under each pain; external parts moist and dilatable. She continued without much change until noon, when I ruptured the membranes and gave her two doses of ergot. This slightly increased the force and frequency of the pains for a time, but the effect was transient and soon passed off. The bandage, friction, pressure, &c., were tried without effect. At 2, p. m., she seemed weary and tired, and in the hope that after rest the pains might return, I gave her two scruples of laudanum, which produced some sleep, but no increase of pain followed. At half-past six she remained in much the same state; the head low down, the pain slight and infrequent. With the assistance of Mr. J. P. Badley, galvanism was resorted to, but it was half-past eight o'clock before the apparatus was quite ready, the patient remaining during the interval in much the same state. The lowest possible power was used; one pole placed over the fundus, and the other over the sacrum. The application increased the force and frequency of the pains, but it did not induce those strong expulsive pains which it had done in my hands in the former cases. For some time the poles were continuously employed, but as the effect was not so decided as I wished, I subsequently applied them at intervals, and placed one of them *in the vagina*, and at the same time slightly increased the power of the current. The effects now became more marked, and by these means a *regular succession* of tolerably good, *but not very strong pains,* were produced at pleasure,

and delivery was accomplished at 10, P. M. The child was still-born.

The effect of the galvanism in this case was less marked than in the other cases in which I had used it; still it was unequivocal, as the pains were so far under its control that they were induced at pleasure by it, and although the termination of the labour was not so speedily effected as I had hoped and expected, still I have not any doubt that it was much hastened by the means employed.

I shall add a resumè of all the cases I can find in which galvanism has been used in midwifery practice.

Mr. Dorrington.—1. Internal hemorrhage during labour; the pains had subsided; *os very rigid*, size of half-a-crown; uterus quite lax; there were all the symptoms of exhaustion from flooding present. Laudanum was given; the bandage applied; and then half a drachm of Secale cornutum administered. This produced pains; the head bore down on the os, but between the pains the uterus was very lax. Galvanism was applied. In a short time "*tonic contractions of the uterus had been called into play.*" It was resumed, and "*strong contractions took place at once.*" After using it for twenty minutes it was finally left off. "So firm a state of tonic contraction having been induced, that we considered it safe to leave the woman" ordinary nourishment, &c. &c. The flooding ceased; pains soon commenced, and labour was completed in four hours afterwards. The following day she was going on well, but died of an "obscure peritoneal affection" some days after.

2. A. B.; ninth pregnancy; full time. A copious gush of blood took place at 12, P. M. Mr. Dorrington saw her at 2, A. M.; she was faint; pulse feeble; no hemorrhage or labour pains; the uterus was lax. "*The firmest tonic contractions were induced the moment galvanism was applied.*" *No more flooding occurred.*

3. Placenta prævia; flooding without obvious cause between seventh and eighth month. She was seen at the eighth

month; slight flooding going on; os the size of a penny-piece; membranes entire; slight pains. The membranes were ruptured, and the galvanism applied; "*good strong uterine action set in at once.*" The hemorrhage was very slight, and did not return; the child was born in three hours after. The use of galvanism had to be resumed, as the pains subsided a little.

4. A case of twins, at seventh month; first child born; no pains for an hour after; they then commenced very slightly; in four hours they were very slight, and recurred only every half-hour. Galvanism was used, "*the effect was immediate, strong labour pains coming on, and continuing while the current was complete.*" The child was born in a quarter of an hour.

5. Induction of premature labour at eighth month. "The uterus hardened under the application, and she felt labour pain, but this lasted only while the shock was continued."

Mr. Clarke.—Two cases of uterine inaction, in which galvanism was used with success and safety to both mother and child. (Mentioned in the Dublin Hospital Gazette, March 1, 1845.)

Mr. Cleveland.—Atony in previous labours; pains commenced on Sunday, and continued until Wednesday evening, when they abated, but did not cease. Ergot, &c., failed to produce pain; symptoms of exhaustion then set in. Electro-galvanism was applied. "*A very decided effect was soon produced.*" "*Regular, strong, and frequent pains came on; and in a quarter of an hour a living child and the placenta were expelled, with the least degree of hemorrhage I ever witnessed. Immediate and firm contraction of the uterus followed.*"

The following cases, by Mr. Demsey, I have extracted from Dr. Golding Bird's lectures:—

1. Hemorrhage after the birth of child in a natural labour. Ergot, cold, friction, introducing the hand, and extracting placenta, failed to produce action. After five minutes' application of galvanism, "*energetic contractions ensued, emptying the uterus. In a minute or two the uterus was felt firmly contracted,*" and all "*danger at an end.*" "The patient quickly recovered."

2. Profuse flooding with each pain for six hours; patient much exhausted; cessation of pains for three-quarters of an hour. No fœtal pulsation could be heard; os size of crown-piece, soft, dilatable; placenta presenting, and beyond this the head; application of poles seven minutes, *when pains commenced; application suspended ten minutes; no indication of pain. Repeated applications and suspensions—first for ten minutes and then for five minutes—for forty-five minutes, when the child was born.* Renewal of application was necessary for the expulsion of the placenta.

3. Almost identical with last.

4, 5, 6, 7. Galvanism, for post-placental hemorrhage; "*the loss ceased almost immediately on passing a current through the uterus.*"

8. Lingering labour, from atony; labour protracted nearly thirty hours; pelvis capacious, well formed; pains extremely feeble, and at long intervals; fainting at short intervals; no pains for nearly three hours; os dilated; fœtal heart heard. On first application, *slight pains;* repeated after an interval of five minutes, *pains decided and energetic;* galvanism applied every five minutes; child born in forty-five minutes. Ergot, &c., had been previously used in vain.

9. Hemorrhage in miscarriage, without uterine action. Pregnancy at the third month; flooding (from fright) of three days' duration; os rigid and unyielding; no pains at all; a portion of placenta felt protruding; constant drain going on; acetate of lead, ice, and cold lotions, ineffectual after seven hours' trial; four doses of gallic acid then produced no effect; ergot every twenty minutes without benefit. Galvanism was now used; no effect for twenty-eight minutes, the contractions *then became quick and forcible, and the ovum was expelled in sixty-eight minutes.* Convalescence was speedy.

10. Induction of premature labour at the seventh month; puncture of membranes; no pains in forty-eight hours. Galvanism was then used *thus:* five minutes' application, and ten

minutes' interval; after the third application, slight, transient, grinding pains came on. Suspension for half-an-hour; cessation of the pains; application resumed every ten minutes for forty minutes; pains became strong and regular; it was now discontinued, but the pains gradually increased, and expelled the head.

Dr. Radford.—1. Hemorrhage at eighth month. Uterus flaccid and inactive. Rupturing the membranes, and other ordinary means, failed to produce action. "*From the moment the circle was completed, uterine pain was excited, and a bearing down effort was produced.*" Tonic contraction took place; the *flooding was arrested, and did not recur,* and the labour was completed favourably.

2. A fourth labour: after full dilatation and rupture of the membranes the pains ceased; constant discharge of blood for six hours; the uterus could be felt flaccid through the abdominal parietes. Galvanism was now tried; a slight power was at first used, and gradually increased; the poles were applied on various parts of the abdomen. The beneficial influence of the agent was soon apparent; the *atonic state of the uterus was soon changed; the parietes became firmer; pains, at first grinding* and slight, *became powerfully expulsive,* and the child was born one hour after the commencement of the operation. *The uterus contracted firmly; the discharge of blood ceased as soon as the uterus began to contract, and there was no further flooding.*

Dr. Radford observes: "The powerful and sanitary influence of galvanism was most decidedly obtained in this case, and the great advantage of this agent is, that its effects may be carried to any degree, from at first only exciting the uterus so to contract that its diameter may be diminished and that its tissues come to be applied to the surface of the child. This, however, may be so increased as to effect the expulsion of child and placenta."

Dr. Simpson's eight cases are recorded with unusual ac

curacy, and, apparently, every care was taken to avoid any erroneous or fallacious result being produced; and, in order to insure this, he noted first the duration of the pain, and then the duration of the interval,—

1st. Before the application of the wires.

2nd. After the application of the wires, but before the circle was complete.

3rd. Whilst the wires were applied, and the circle complete.

4th. After the removal of the wires.

He thus, it seems, took the best means to estimate accurately the extent to which uterine action was excited, and to avoid a fallacy which might be caused by the influence of emotion, &c.

I shall not enumerate Dr. Simpson's cases at length, as I have done those previously recorded, because I have a *resumé* of them in his own words, in which, of course, the results are truly stated; and as my business is with the results simply, there is not any necessity for my giving them in detail. The others were so given that I might use as much as possible the words of the authors, and thus insure accuracy.

"In one instance the pains were more frequent in their recurrence, but shorter in their duration, during the application of galvanism. In five other cases, the employment of galvanism neither increased the average frequency of the pains nor their average duration. In one case the pains ceased while the galvanism was applied, and returned upon its removal; in the instance which I have last detailed the uterine action ceased while the galvanism was applied, and did not return upon the withdrawal of the galvanic action, nor for twenty-four hours subsequently. There was no reason whatever at the time to expect this as a probable occurrence, independently of the galvanism. But even admitting, for the sake of argument, that the cessation of the uterine action was not the result of the galvanic influence used, still the fact is amply sufficient to show

that the galvanic current had not, at least, the power either of increasing the pains, or of continuing or maintaining them when they offered to fail. It may be proper to add, that during the galvanic action I did not find (in any of the experiments) between the *clonic* uterine contractions or pains, any evidence whatever of unusual *tonic* contractions of the uterus, as shown either by any degree of hardness on the general uterine tumour, or by any degree of tension in the pressure of the bag of membranes, or the child's head, against the cervix uteri."

Thus the results of the foregoing thirty-two cases, in which galvanism has been used in obstetric practice, have been cited, and it appears that its effects were—

Decided in 24 cases.
Equivocal in 1 ,,
Negative in 7 ,,

So that in 75 per cent. the effects of the agent were clearly manifest:—In eight cases, for hemorrhage before expulsion of the ovum; in six cases for hemorrhage after expulsion of the ovum; in eight cases, for atony of the uterus; and in two, for induction of premature labour.

The cases recorded have occurred in the practice of eight observers. Of these, seven bear unvarying testimony to its powers, whilst one altogether doubts it. Indeed, all the cases in which the results were equivocal or nugatory were observed by him; and he has not observed a single case in which the result was satisfactory.

Hence, the facts seem to be in such strange contrast that one is almost forced to the conclusion that in Dr. Simpson's cases some undetected source of fallacy must have existed; and Dr. Golding Bird seems to entertain a somewhat similar opinion, for in his Lectures on Galvanism he says: "I cannot for one moment admit the validity of his (Dr. Simpson's) opinion when opposed to the facts of Dr. Radford, Dr. Lever, and others; but would endeavour to show the mode in which these

opposite statements appear to admit of reconciliation. This is founded on the opposite effects of currents, according as they follow the course of the centripetal or centrifugal nerves. Now in the magneto-electric coil, in which currents are excited by repeatedly breaking contact by a vibrating bar, we have two currents moving in opposite directions, to each of which the patient who is subject to the experiment becomes submitted. Now, these currents are of unequal strength, and if the most energetic, that on breaking contact, be passed in the direction of the *vis nervosa*, it will produce painful contractions, which, the moment it passes in the opposite direction, will become relaxed; for a direct current tends to produce contraction, an inverse current, paralysis. Hence, I should urge the accoucheur not to employ the apparatus in which both these currents are produced, but simply the *single current* machine. In using this I would suggest the positive conductor to be placed over the lumbo-sacral region, and the other to be carried over the abdominal surface with a gentle friction. In this way powerful uterine contractions may be easily excited"[a].

I am not sufficiently master of the subject to offer any opinion as to the theoretical truth of this explanation; but, as referring to the case in question, it must fail as an explanation of the want of success in Dr. Simpson's cases, for Dr. Simpson says that "he used an instrument similar to the one used by Dr. Radford, and made by the same makers." Hence it ought to have produced the same sort of currents, whatever they were, and the same results.

Dr. Tyler Smith has suggested that the emotional excitement produced by the application of galvanism may be the cause of the failure in some instances. He says: "The application of the remedy, and the painful sensations it excites, disturb the emotions considerably. In some cases the emotional excitement increases the influence of the galvanism; in others

[a] Page 144.

it weakens or suspends them altogether." It is, I think, hardly possible to over-rate the importance of regulating the emotions as much as possible during labour, and to obtain this end it is necessary that the attendant should exercise the most perfect control over *his own emotions and conduct generally*, whilst in attendance on his patient. Still, we can hardly comprehend how the emotions should have acted "pro" in the twenty-four cases of different practitioners, and "con" in eight of Dr. Simpson's. Thus, Dr. T. Smith's explanation seems to me to fail also; and we are, as I before observed, forced to the conclusion that some unexplained source of fallacy existed in the eight cases alluded to; what this may be I shall not attempt to explain, but I feel certain that those who have witnessed the power of galvanism will never for one moment doubt its efficacy, although there may be exceptional cases in which it will fail.

It can hardly be necessary to insist upon the "*power of emotion*" after the exposition of Dr. Tyler Smith; but I will give two illustrations which happened to me some years since, before his views were made known.

I was engaged to attend a patient in her first labour. She was young; an only child and a "belle"—in fact, a spoiled child. When I saw her, she was in the most favourable position for a speedy and safe delivery, and I told her that she would probably be delivered in the course of an hour; the pains continued quick and regular, and the progress was favourable, when I thought it necessary to confine her to her bed. To this she objected (in a temper) and refused to submit to my wish. I thought it necessary to be positive, and an altercation took place. The pains *entirely left her* for some time; and I left her room. There was not any pain for two hours, when her mother came and told me that my patient wished to see me. She immediately apologized for her conduct, and, on my assuring her that I had forgiven her, and resuming my friendly conduct towards her, she lay down. The pains almost immediately returned, and she was speedily safely delivered.

Another patient had requested me to attend her in her fourth labour. She was particularly desirous that I should attend her *myself*. When she sent for me, I was at some distance in the country, and my assistant visited her. The pains had been very frequent and strong. He found the os fully dilated, the membranes ruptured, and the head pressing on the perineum. The moment she saw him (although she knew him) the pains abated, and soon entirely left her. When I returned, about three hours after, I found that not the slightest pain had recurred since he came in, although he had tried all the usual remedies, including ergot. I then sent him for the galvanic apparatus, but in less than five minutes after he left the room the pains returned; and without its application being necessary, she was immediately delivered.

Admitting that galvanism failed in eight cases to produce uterine action, and assuming, which I believe we are justified in doing, that in twenty-four cases it succeeded, we find that in 75 per cent. of the cases adduced its effect *was manifest and decided*.

Dr. Golding Bird, in his lectures already referred to, observes: "The result which I have arrived is, that this agent, like the ergot of rye, and perhaps other *ecbolic* remedies, generally fails to *develop* uterine action *de novo*, but that, having once been excited, they are always and almost invariably rendered more energetic, and even when they have ceased for a while, they are readily again actively set up by the application of the current. Hence, though I believe it will generally fail to induce premature labour, it will *as* generally succeed in stimulating the uterus to vigorous contractions after labour has actually commenced"[a].

Dr. Tyler Smith also believes that "*the uterus can be made to contract by this agency when it will obey no other stimulus*"[b]. Dr. Ramsbotham and Dr. Lever also have borne testimony to

[a] Page 147. [b] Principles of Obstetric Medicine, p. 367.

its power of acting on the uterus; and when we add to their names the names of those who have been already quoted, the weight of authority is also strongly in its favour.

Hence, I think that I have shown that in galvanism we have a most important addition to our obstetric appliances, and one to which we may, with the greatest confidence, resort in cases of flooding, either before or after delivery, and also in cases of atony of the uterus. Its most important power being that of controlling hemorrhage, in doing which it seems not only to act as an exciter of the uterus, but as a powerful general stimulant, thus at once carrying out the most important indications of treatment. If this be true, as I have no doubt, little argument will be required to enforce its use. He who has watched a case of dangerous flooding,—who has seen the life's blood of his patient gushing forth,—the symptoms of exhaustion becoming imminent, and all his means of relief tried in vain, will but too gladly *grasp* at any remedy which, even in a small proportion of cases, can afford relief, much more will he gladly avail himself of one which will avail him in the majority of cases.

The results of its application in cases of simple atony of the uterus are not so important as in cases of flooding. Many of these cases may safely be left to nature when, after a tedious and protracted labour, the patient may be safely delivered, and do well. In some of these cases, however, symptoms of exhaustion come on, and delivery is imperatively called for; and in other cases the anxiety of the patient and her friends may make us wish to hasten the delivery, perhaps, in some degree, against our own better judgment. Hitherto, the forceps have been resorted to in these cases, but if, as Dr. Blundell says, "instruments are always a great obstetric evil" (an opinion to which I heartily subscribe), any means which will enable us to supersede their use must be regarded as a "great obstetric good." Galvanism must then, I think, be looked upon as an important agent for the relief of simple

atony of the uterus; and indeed, a striking illustration may be given of the advantages that may be expected to accrue from its use by referring to the report of the Vienna Lying-in Hospital, by Dr. Arneth, which was reviewed lately in this Journal. From it we find that in 6527 cases, the forceps were used forty-five times, and in twenty-eight of these for simple atony of the uterus. Now, if galvanism had been used in these twenty-eight cases, and had succeeded in the proportions I have indicated (viz., three in four), twenty-one cases would have to be deducted from the forty-five forceps cases; and, hence, the cases of instrumental interference in 6527 would be twenty-seven, instead of forty-five, or more than one-half less. I do not think it necessary to insist further upon the value of an agent which can thus reduce the proportion of cases of instrumental delivery. If it had no other advantage than that of saving the time of the attendant it would be a great boon, for who can over-rate the annoyance of a case of uterine inaction in which every adjuvant to a speedy and safe delivery "*but pain*" is present:—of a well-formed pelvis, a well-dilated os, a well-lubricated vagina, *a quarter of a pain every half-hour*,—and all our ordinary stock of exciters, centric and excentric, exhausted? We can hardly be too thankful for an agent which will befriend us in such a strait. I would not, however, have it understood that I wish to advocate much interference with the process of labour; on the contrary, I would reiterate the warning of Dr. Blundell, "*meddlesome midwifery is bad;*" and when things are going on pretty well I would be content, and wait; but in cases such as I have indicated, it is our duty to interfere, and to take care that we interfere in that way which shall be least liable to injure our patient. In these cases I believe that galvanism will yet be found to be of the greatest service, shortening and relieving the sufferings of our patients, without causing any danger.

Ergot of rye has long been deservedly regarded as the most potent exciter of the uterus. Its virtues are too well known to

admit of doubt, or to require any eulogy. Every obstetrician must be fully conscious of them. I am not, however, aware of any statistics by which I can form an idea of the proportion of those cases in which it succeeds to those in which it fails to produce action of the uterus. For myself, I am disposed to give it with caution; hence, my experience of it is not so great as that of many others who do not attend more midwifery cases than I do. For some time past I have kept a careful register of every labour I have attended; numbering in all 330 cases. From this return, I find that the ergot has been administered in thirty-eight cases, and its effects were decided in twenty-six cases; equivocal in six; *nil* in seven.

This result of the effects produced by the administration of ergot, will, I feel sure, startle many who are accustomed to use it, and not record the result of its action. I was, indeed, much surprised myself at the numbers, as I had a strong impression that it acted *decidedly* in a far greater proportion of cases. However, my record was kept as a mere statement of facts, and as I had no preconceived view to support, it may, therefore, as far as it goes, be relied upon. So that the cases in which the effect was equivocal or *nil* were just one-third, or 33 per cent.

Of course I do not offer this as an authentic inference as to its powers (the numbers being much too small to justify me in doing so), but as the best approximation within my reach, and if I may be allowed to offer it *as* an approximation to the truth, and then to compare its effects with the effects of galvanism, we shall find that it succeeded in two-thirds, whilst galvanism succeeded in three-fourths of the cases; and hence we may claim for galvanism the first place on the list of exciters of the uterus,—a result I was not at all prepared for when I commenced this investigation.

I have yet to consider the objections to the use of galvanism in obstetric practice, and these appear to me to be very few. The dangers of flooding are so great, that I should be disposed to

employ it in almost any case where ordinary means had failed to arrest speedily the bleeding; otherwise I should be careful in applying it in cases where there was much rigidity, or want of capacity in the passages; for I am so convinced of its power to produce the strongest contractions, that I should fear laceration or contusion of the soft parts, or some other serious mischief. It is true, that its powers are said to be under control, and so I believe they very much are; but until this point shall be more fully proved, I think we should use every precaution, as its injudicious application might seriously prejudice its use. If experience should prove that its action may be so controlled, its value will be very much enhanced.

I do not think the pain it is said to occasion would form any valid objection to its use; indeed, in my hands the pain, independent of that caused by the contractions of the uterus, has not appeared to be severe; and if it were, when we consider the dangers it is intended to meet, I do not think that *that* should weigh in our decision. If, however, in any exceptional case, the pains should be so severe as to make us unwilling to continue the use of galvanism, *that* might now be easily obviated by the employment of chloroform.

The mode of application requires a moment's consideration. Should the poles be continuously applied, or should they be applied at intervals so as to imitate the periodicity of the pains? I am myself at present disposed to apply a continuous current until the pains become strong. I would then suspend the action altogether, and watch the effects; for I believe that in many cases the uterus will continue to act, when once *set going*[a]. If the pains should afterwards become weak and in-

[a] In the Medical Gazette for March, 1849, Mr. James, of Exeter, published a paper on the "air tractor," in which he remarks, that when the uterus ceases to act from exhaustion or over-exertion, it will resume its efforts if slight assistance be given to it. He says: "We continually see cases where the uterus seems, after great efforts, to have abandoned, as if in despair, any further attempt to expel its contents; if we employ the forceps or crotchet, and the uterus feels that its efforts *will* be assisted,

efficient, I would apply interrupted currents; this, however, is yet a matter for experiment and observation.

From the preceding inquiry, I think I am justified in inferring that in galvanism we have a *new, safe, and powerful* agent for exciting the contractile powers of the uterus, to which we may with confidence resort in all cases where delay or danger may arise from want of action in the uterus,—one that speedily excites the tonic and clonic contractions of that organ, and thus become a powerful means of arresting hemorrhage both before and after delivery or the expulsion of a premature ovum; and one, also, that in cases of uterine inaction, where exhaustion threatens, will expedite labour, and so obviate the necessity of instrumental interference. I think we may also further infer that this action is not the result of emotion or reflex action, but that it is *a true and positive result of the application of the galvanic current.*

The great obstacle to its general use consists, I think, in the want of a convenient apparatus. The formidable appearance of the machine; the trouble of carrying it about; the necessity of an assistant, and other minor objections, will prevent our using it in many cases where, I feel sure, it might be often applied with benefit to the patient and her attendant; but in those graver cases to which it seems so peculiarly adapted, these trifling obstacles will not be considered[a]. A

they will be renewed. *I do not believe that it is from the stimulus of the instrument, for the uterus rarely begins to act till we begin to pull.* It is just like a willing horse with an overload, who will struggle till he finds further effort unavailing, but if the driver puts his shoulder to the wheel, he will again try his best."

This paper made a strong impression on my mind, and I have repeatedly tested the truth of the position laid down, and it was a knowledge of this truth, together with what I have observed when using galvanism, that made me think that violent action might be produced, which could not be allayed, and that hence danger might arise where *physical obstruction* to delivery existed. Hence the caution I have suggested.

[a] I have just had my attention called to Pulvermacher's "hydro-electric chain batteries." One of these, "capable of producing all the effects of a powerful voltaic pile of 120 combinations, occupies the space of an ordinary sized pocket-book." (See

small portable instrument would certainly be a great acquisition to the accoucheur.

I have thus endeavoured to *recall* the attention of the profession to one of the uses of an agent, which, I think, is little employed, and, I believe, less understood, in obstetric practice, —one, I do not doubt, of vast power, and which will be found to avail us in some of the most trying emergencies of practice, when every other means have failed. If I shall succeed in inducing others to test its powers, and to record their experience of it, my end will be answered. Of the result of an extended inquiry I feel no doubt. It is, however, to those who have the charge of large obstetric hospitals that we must look principally for information; they have the means of speedily carrying out a set of well-devised experiments, and so at once of deciding the question I have here endeavoured imperfectly, I fear, to discuss.

Whilst engaged in copying these observations for the printer, I was called to a case, of which the following is a record:—

September 15, 1851.—Mrs. C., aged 33, at the full period of the fourth pregnancy; head presenting, face to pubis. I saw her at 6, P. M.; the pains were regular, but not strong; os the size of a five-shilling piece, soft and thick; head just above the brim. At 10, P. M. os three parts dilated; membranes entire; head in same position; pains regular, not strong, or very frequent. During an examination, the membranes broke, after which the pains became weaker, and soon entirely ceased; the usual means, including ergot in full doses, and *irritating the vagina and cervix with the finger*, failed to produce pain, and she remained in the same state until 12 at night. At a quarter-past twelve galvanism was applied; the apparatus did not act

Lancet, August 30, 1851.) If these instruments are found to possess the powers claimed for them, they will soon, I trust, form a part of the obstetric appliances of those much engaged in midwifery practice.

very well for some little time, but in about ten minutes she complained of slight pain. She then complained, for about twenty minutes, of violent pain in the sacrum and thighs; in a few minutes more she had a sharp expulsive pain; this was quickly followed by another, sharper; the current was applied continuously for about fifteen minutes more (in all for forty-five minutes); the pains continued to increase in force and frequency, and had now become strong and expulsive, bringing down the head, which was felt descending through the superior aperture. The current was now broken altogether, and the application finally discontinued. Strong, regular, expulsive pains continued, and in about thirty-five minutes more of sharp labour, a living child was born. The placenta soon followed; the uterus contracted well; and she is now (September 17) in every respect as well as can be.

Art. III.—*On Traumatic Spasms.* By Wm. Colles, F.R.C.S.I., Surgeon to Steevens' Hospital, &c.

As facts accumulate, and surgeons come to have a more perfect and intimate knowledge of the various forms of disease, many points, which seemed to be obscure and difficult to be accounted for, will become clear and easy of explanation. Much of the previous obscurity will very often be found to have arisen from the fact, that two distinct diseases were not only confounded together, but described and treated as being one and the same, hence leading to great difference of opinion with regard to description, treatment, and results, according as in the practice of individual surgeons one or other form of disease would predominate. That such has been the case with regard to tetanus I have little doubt.

We find different surgeons describing different symptoms as characteristic of tetanus, and recommending various and often opposite plans of treatment; and each asserting that the plan adopted by him was found almost uniformly successful; yet,

when we come to test their views by practice, we too often find that no reliance can be placed in any one of these descriptions, either as regards diagnosis or treatment.

We cannot suppose that all the surgical writers to whom I have here referred intended to mislead the profession, for, the character of some of them is too high to allow us to harbour such a suspicion; and it therefore only remains to conclude that they have been misled themselves, have described as tetanus cases which were not so, and hence recommended a plan of treatment which was found to be ineffectual in the practice of others. I think, then, the first step to clear up the difficulty with regard to this disease is to endeavour to find out what other affections may be and have been confounded with it.

With this view, I propose in the following observations to endeavour to describe some distinct spasmodic affections which I have seen attending on injuries; to show the distinction between them, and the different treatment applicable to each; and as these affections are chiefly found attending on fractures, it is to this class of injuries I will chiefly direct attention. I will speak of them according to the time of their occurrence after the receipt of the injury.

There are, I think, four distinct affections of this kind, which differ in their time of invasion, their progress, and their treatment, and yet have been more or less confounded with tetanus.

The *first* is the least important and least dangerous. It comes on immediately after the receipt of the injury, before any adjustment of the parts has been attempted; on the least motion of the patient, or handling of the parts by the surgeon, the muscles of the limb affected are thrown into a sudden spasmodic action, causing a jerk in the part, and an increased displacement of the fractured ends of the bone. This is attended with severe stings of pain. This sudden momentary spasm ceases and the parts remain quiet, the muscles soft and relaxed and the patient free from pain, until it is again induced by any motion imparted to the limb either by the patient or surgeon. The occurrence of this spasm has

been attributed by some to a sharp spicula of bone irritating the muscles, by others to the want of support or of points of resistance to muscular action. The subject has been fully discussed by the late Dr. Houston, in a valuable paper on Fractures, in the former series of this Journal[a]. I shall therefore only observe on the treatment of it, which is very simple. We have merely to place the limb in such a position as will allow the muscles to be most relaxed, to restore the fractured ends of the bone to their natural position, and to retain them so by firm, but not too tight dressings. A full opiate will assist the local treatment, and this may even at times require to be preceded by the abstraction of a few ounces of blood.

This is never a formidable affection, and seldom continues beyond the second or third day, though up to that time the surgeon must avoid disturbing the parts as much as possible, as the tendency to spasm may still remain, and the least roughness in manipulation may cause a recurrence of spasm, and a renewed displacement of the parts.

Such is the first form of spasm I mean to describe; we should expect that it would be readily known to the surgeon; yet we have evidence that it may be, and has been confounded with another very different form, to which I shall next direct attention.

This, the *second* form, is very different from the preceding, being, perhaps, the most severe and rapidly fatal of all these spasmodic affections. It generally commences about the third or fourth day after the receipt of the injury, at the time we would expect inflammation to be fully and fairly established, and all danger from its excess or irregular action to be passed. At first the patient, while dozing to sleep, is suddenly awakened by a severe jerk in the limb, and a very acute but transient attack of pain, which returns every time he endeavours to compose himself to rest, so that at last he will use every exertion of his mind

[a] Vol. viii. p. 477.

to prevent any tendency to drowsiness, such is his horror and dread of the recurrence of the spasm. This spasm is at first confined to the parts about the injury; the muscular action during it is very violent, almost always causing a displacement in the fracture, which cannot be retained in its position by any application; in fact, any restraint seems only to aggravate the severity and rapidity of the seizures, so that we are compelled to leave off all splints and dressings; and the pain attending it is so sudden and excruciating, that even the strongest-minded patient cannot avoid giving utterance to most agonizing shrieks. When this sudden jerk of muscle and attack of pain have ceased, the parts return to their natural state; the muscles become soft and relaxed; the limb free from pain; and the patient can move, speak, and swallow almost as usual.

The spasms commence, as I have said, in the injured limb; recur at uncertain, irregular, and generally long distant intervals; but as the disease advances, they return more frequently and regularly. At first the injured limb (*e. g.* the leg) only is affected; as the disease advances the spasms attack the muscles of the thigh, extend to the abdomen, to the arm of that side, then gradually to the other side of the body, until at length every voluntary muscle is in violent action during this momentary spasm, distorting the patient's body and the injured limb in a most fearful manner.

As regards the constitutional symptoms, the pulse becomes increased considerably in quickness, but not in force; the temperature of the body is not increased at first; as the disease advances, a perspiration breaks out, and becomes more profuse, cold, and clammy towards the end, when the patient's mind, hitherto collected, begins to wander.

This form of spasm is most rapidly fatal, generally terminating in death, apparently from exhaustion, between the second and the sixth day from its invasion. And it is remarkable, that the severity and rapidity of its course is not connected with the severity of the injury: I have seen it follow a simple

fracture of the fore-arm. During its progress it is, in my experience, quite uncontrollable by medical means.

The largest opiates have no other effect than to stupefy the patient; they do not prevent the recurrence of the spasm. Even chloroform, administered both externally and internally, has failed to effect more than a slight temporary alleviation from pain. I believe there is only one remedy that holds out any certain prospect of saving the patient's life, and that is, the removal of the limb. And even this, to be effectual, must be performed before the spasms become general or frequent.

An examination of the limb after removal will frequently explain satisfactorily the cause of this affection. We in general find that a portion of nerve has become impacted between the fractured ends of the bone, and that it has become severely pressed on and subsequently inflamed. And to this we must attribute the spasms and pain, although we cannot so readily explain how they become so general over the body, and so rapidly fatal.

As to whether the operation of cutting down on the injured part, and freeing or dividing the nerve, would be effectual in removing the symptoms, I cannot speak from experience, but from recorded cases. I think we may infer that some such proceeding has at times been successful, and I would be the more inclined to recommend a trial of this operation, now that we can avail ourselves of the assistance of chloroform, which, although it does not stop the spasm, yet may cause it for the time to be less severe, and will almost certainly render the patient insensible to pain. Still we must be guided in a great measure by the nature of the injury ; in general, it would be a tedious operation, and would be very much impeded by the spasms, which our manipulations must very naturally aggravate in frequency, if not in severity; and the patient suffers such torture, and the disease advances so rapidly, that seldom either patient or surgeon, if fully aware of the alarming nature of the case, would hesitate in having recourse to the speediest and most effectual means of obtaining relief.

This is the form of spasm which has been, I think, most frequently mistaken for tetanus. I have myself more than once seen the error committed, and the time for operation allowed to pass by, in many endeavours to remove tetanus, where this disease did not exist. I have no doubt but that success in a few cases of this disease induced Baron Larry so strongly to recommend amputation as a cure for tetanus; and this opinion will be strengthened if we examine the symptoms, where these are accurately recorded, which he adduces as proofs of his assertions, and we must, from a consideration of them, I think, conclude that he is describing the symptoms of this form of spasm.

The *third* form of spasmodic affection is that denominated tetanus. This generally comes on towards the cure of the injury, about the time the sloughs have all been separated, and the wound puts on a healthy, healing aspect, that is, about two or three weeks after the receipt of the injury. It commences with stiffness about the jaws, the muscles becoming rigid, rendering the motions limited and swallowing difficult. The stiffness gradually extends to the chest, abdomen, and extremities, and this rigidity once established, does not one instant relax during the entire course of the disease; and this it is which gives to the face that peculiar expression of countenance which, once seen, can never be mistaken.

Along with this rigid state, the muscles are also attacked by spasm, in which they suddenly become more contracted. This spasm is attended with a jerk in the expiration, and a sudden pain in the scrobiculus cordis, after it the muscles return to their former rigidity, but never relax. The spasms increase in severity and in rapidity, and the disease may thus continue for two or three weeks. During its course, we find little or nothing to connect the local with the general symptoms; the wound still looks healthy, the secretions from it become very trifling; the patient does not complain of any pain there; in fact, it has happened that he has entirely forgotten the fact of

his having had an open sore. On examination after death, we can find little or nothing to account for the symptoms.

As to the treatment of this spasmodic affection, I do not now purpose to offer any suggestions. I will merely remark, that if there is one point on which surgeons of the present day are agreed, it is, that amputation has no influence on the progress of the disease. Hence the great importance of distinguishing these two last forms of spasmodic affection, so as not to treat them as the same. In order to show the more important distinction between them, I will compare their more essential differences, and thus attempt to render the diagnosis of each clear and distinct.

1st.—The second form of spasm which I have described comes on in three or four days after the accident.	Tetanus seldom appears before the second or third week.
2nd.—It commences by spasm in the limb injured.	Tetanus by stiffness of the throat.
3rd.—In the intervals between the spasms in the former, the muscles are quite relaxed, and the patient can swallow and move with comparative ease.	In tetanus there is, as the name implies, constant rigidity, almost preventing swallowing or motion of any description, and giving the peculiar expression of countenance.
4th.—In it the pain is chiefly in the wound, and is most excruciating during spasm.	In tetanus there is no pain in the wound, but a pain, not very severe, at the scrobiculus cordis.
5th.—It runs its course in three or four days.	Tetanus may continue for as many weeks.
6th.—In it amputation holds out the only prospect of relief.	In tetanus amputation is perfectly useless, if not injurious.
7th.—The former seems to have a local origin.	Tetanus is more of a constitutional affection.

Such are the leading distinctions between these two forms of spasmodic affection; and although the symptoms may not every one of them be so distinctly defined as I have here denoted, yet the majority of them are always present, and quite adequate to enable us to form a correct judgment as to the line of treatment to be adopted.

It now merely remains for me to allude to that form of spasmodic affection which is consequent on the healing of the wound where the end of a nerve becomes engaged and pressed on by a tight cicatrix. This affection, sometimes denominated tic douloureux, is attended with considerable darting pain and spasmodic action of the muscles of the limb; sometimes extending through a considerable portion of the system. This pain and spasm are in general induced by the slightest touch, or exposure to cold. It will continue for a long time without interfering materially with the general health.

External applications have afforded temporary relief, but in general the patient is anxious for the complete removal of the disease, which can only be effected either by amputation, or division of the nerve above the cicatrix.

In one very severe case of this affection in a stump of the arm, I removed two or three inches off the end of the stump, to the great relief of the patient. The case is fully related, and a drawing of the nerves given in Professor Smith's Treatise on Neuroma.

Spasms attending injuries of the brain constitute a different class of disease, as the affection depends on the local injury to the brain.

Such are the principal spasmodic affections which I have seen to attend on injuries; and I trust that I have established decided and well-marked distinctions between each. My object, however, has been to show that tetanus has hitherto been often confounded with another kind of spasmodic affection; to point out the distinguishing symptoms by which we may recog-

nise one from the other disease; to lay down satisfactory and defined premises, from which we can infer whether the operation of amputation will afford probable chance of cure in one and not in the other affection; in fact, to remove from the history and treatment of tetanus part of the doubt and uncertainty which attended them.

Art. IV.—*On Congenital Deficiency of the Septal Walls of the Heart, as a Cause of Cardiac Murmurs.* By Thomas H. Ledwich, F. R. C. S. I., Lecturer on Anatomy and Physiology in the Original School of Medicine, &c.

The effects of congenital deficiency of the septal walls of the heart have already been so amply discussed, that any further observations on them may seem to be an unnecessary attempt to prove statements fully admitted, or appear to be an injudicious desire to involve in obscurity a subject rendered simple in its details, not only by continental writers, but likewise by many distinguished physicians of our own country. It is not, therefore, without a justifiable hesitation that any writer should enter on the discussion of a topic that may develop opinions differing in many respects from what are considered as established facts in pathology, lest he might incur the inputation of ignorance, or that more common attribute of the present age, an egotistical indifference to the views of precedent authorities. But, fortunately, it is permitted to me neither to join issue with the statements of other writers, nor to promulgate any doctrines, startling only from their novelty, and difficult to reconcile with pre-existing ideas, as I have simply to detail morbid conditions, without either exaggeration or distortion, and to explain the physical manifestations which, according to mechanical principles, would supervene on altered structural arrangement.

At a recent meeting of the Pathological Society of Dublin, Dr. Lees exhibited the thoracic viscera of a child, the subject of tubercular pleurisy. The existence of a well-marked systolic

murmur, and its occurrence with patency of the foramen ovale, elicited some difference of opinion as to its source, while each seemed to be sustained by an equal amount of probability. Dr. Lees placed the heart, together with the notes of the case, at my disposal, in order that I might be afforded an opportunity of supporting my views, which I casually mentioned in the course of conversation on the subject; and as the analysis of the symptoms, and their import in diagnosis and treatment, may be of some utility, independently of any theoretical reasoning as to the cause of the murmur, the practical value of the case itself will conceal in some degree the imperfection of the physiological and pathological deductions.

Julia Martin, aged nine years, a delicate-looking child, was admitted into the Meath Hospital on Wednesday, the 26th of February, 1851. According to the statement of her mother, she had enjoyed tolerably good health until within the last fortnight, when she began to suffer from oppressed breathing, but never complained of pain in either side. Her symptoms on admission were as follows: Pulse 132; respiration 44; decubitus on the left side; measurement showing no disparity between the two sides; the anterior and posterior regions of the left side of the chest evinced dulness on percussion; respiratory murmur nearly inaudible, except in the supra-scapular and sub-clavicular regions; on the right side respiration was puerile, with an extensive and well-marked friction sound anteriorly and laterally; impulse and sounds of the heart most appreciable to the right side of the sternum, as also a loud murmur, synchronous with the first sound, most audible at the ensiform cartilage, but not traceable in the course of the sternum.

February 27th. The friction sound still continues on the right side, with dilatation of the superficial veins; no obliteration of the intercostal spaces; she lay for some time on the right side; murmur still continues audible: she has had some slight cough and perspiration during the night, but there is no anasarca.

28th. Scarcely any alteration in the general symptoms, but the friction sound is not so audible anteriorly.

March 1st. Pulse 128; cough more troublesome; friction sound still evident anteriorly; sounds of the heart most audible to the right of the sternum.

4th. Pulse 120; other symptoms unaltered.

6th. Pulse 124; respirations 46; friction sound replaced by a coarse, mucous râle; on the left side the dulness has extended to a level with the clavicle; the intercostal spaces less marked, but not altogether obliterated; cardiac murmur persists.

7th. Pulse 120; respirations 44; cough frequent, with muco-purulent expectoration; decubitus now continually on the left side; face blue and congested; feet slightly swollen.

9th. Muco-crepitating râle continues on the right side anteriorly and laterally, with puerile respiration and friction sound in the infra-mammary region; on the left side the dulness remains the same, with bronchial respiration evidenced posteriorly, corresponding to the large divisions of the bronchial tubes.

12th. Pulse 126; far more livid and congested in the face; mucous râle still persistent.

14th. Pulse 124; respirations 40; the râle very large, approaching to gurgling; on the left side the bronchial respiration is very marked superiorly and posteriorly.

17th. Pulse 132; the lips, hands, and nails are quite livid; the other symptoms unaltered.

20th. Pulse 146, very weak; a blister has been applied to the posterior part of the left side, and here there appears to be a tendency to the return of the vesicular murmur, with a corresponding diminution of the bronchial respiration; sputa muco-purulent.

21st. Pulse 128, small; respirations 40; she lies on the right side, the respirations on the left side are short, with muco-purulent râle; continued diminution of dulness; cardiac murmur persistent.

22nd. Respirations 52, very weak; sinking rapidly; face and hands purplish in colour. She died on this day.

Dr. Lees made the following observations, in describing the relation between the post mortem appearances and the symptoms that had existed during life:—"Thorax:—heart enlarged and dislocated towards the right side; a small quantity of sero-sanguineous fluid in the left pleural sac, and also slight adhesion between the costal and pulmonary pleuræ, but the fluid not sufficient to exercise any marked compression on the lung, which, although the seat of general tuberculization, retained enough of its vesicular character unaltered to be capable of action during respiration. The surfaces of the pulmonary and costal pleuræ of the right side were coated with a layer of exudation matter (lymph), in which numerous spots of tubercular deposit could with facility be detected. The lungs, spleen, and intestines were likewise the seat of the same disease, not only on the surface, but likewise interstitially. The physical signs were fully accounted for by the state of the lung,—the plastic effusion present on the right side explained the cause of friction sound, while on the left, feebleness of the respiratory murmur had been observed, and as the effusion increased in quantity, evidenced by dulness and dyspnœa, the breathing became bronchial, and again, with the diminution of the dulness, the bronchial respiration subsided, giving place to a feeble respiratory murmur, indicating that the vesicular structure was free to expand. At one period it had been a question whether it would not be advantageous to resort to paracentesis, and Dr. Stokes, who saw the child, agreed with me as to the propriety of such a proceeding, conceiving that as the lung was free to expand the operation might prolong life. On the first day I saw this child I pronounced it to be a case of tubercular pleurisy, guided in my diagnosis in some measure by the symmetrical development of the disease, because, as a general rule, where the pleurisy is double its origin is tubercular. The absence of pain in the side is not easily accounted for, nor can

the very sudden commencement and rapid progress of the disease be readily explained, unless it be considered as a case of acute phthisis, for if the account of the mother is to be relied on, it would appear that this extensive amount of disease had begun and terminated fatally in the brief space of a month."

If the examination of the physical causes of abnormal cardiac sounds involved the necessity of an extensive clinical experience, I would hesitate to express my deliberate convictions on the cause of the murmur in the present case, and willingly yield to those whose opportunities would enable them to arrive at conclusions more just, as being derived from an extended sphere of observation of diseased action at the bedside; but, being aware that physical signs deviating from a state of healthy functional actions must necessarily have their source in anatomical changes, appreciable to the senses, and influencing the physiological laws of the organ in its altered condition, I assume it to be a subject not altogether foreign to the province of those most conversant with the normal anatomy and function of the structures of the human body, and their aggregate as organs. Now few subjects have claimed more of the attention of the anatomist and experimental physiologist than the origin and correct localization of normal cardiac sounds, and were it not that post-mortem investigations materially assisted experimental research, and confirmed the inductions of the anatomist, the physiologist would still find matter for original investigation within the limits of this single organ. But whilst those conversant with the present state of science are aware that much diversity of opinion still exists on this question, yet our acquired information is quite sufficient to localize the majority of alterations occurring in the communications between the cavities of the heart or in the openings of its different vessels. It would be only recapitulating facts sufficiently well known were I to speak here of the causes of cardiac phenomena, and enter into an account of the arguments by which the various opinions of observers are sup-

ported, and rendered at least probable. Such disquisitions necessarily tend to embarrass the subject which they are purposed to illustrate, in proportion as they recede from a particular to a general connexion with the topic under examination.

The following were the post-mortem appearances of the heart in the case of Julia Martin:—It appeared somewhat larger than is usual at such an age, but this might in some measure be accounted for by the cause of death; right auricle a little dilated and thickened; eustachian valve large, so as to conceal the caval opening; foramen ovale large and patulous, and surrounded by a thick annulus; the proper valve destined to close the aperture stretched tensely across the inferior segment of the opening, and occupying about one-third of the space; right ventricle exhibits hypertrophy with dilatation, but somewhat exaggerated, in consequence of the mode of death causing engorgement of the right cavities of the organ; pulmonary artery a little smaller than the volume of the ventricle would require in its efferent vessel; semilunar valves perfectly healthy; auriculo-ventricular opening not dilated in an equal ratio with the ventricular valves, which were fully competent to prevent regurgitation, the only trace of disease being two or three apertures capable of admitting a very small pin, or a fine probe, the largest one near the free edge, the other near the base of the left tricuspid curtain; the left cavities of the organ did not present any morbid appearance either in their walls or valves, but it is a matter of doubt whether the aorta was not a little dilated above its origin.

From the preceding post-mortem appearances it may be inferred, that the source of the murmur might be looked for in either of three situations, namely:

First. In the auriculo-ventricular valves (right side).

Second. In aortic dilatation.

Third. In the patulous foramen ovale.

These propositions will now be examined in their order of succession, and I will at the same time explain the reasons which

induce me to attach but slight importance to the first as causes; also the reflections which constrain me to the opinion that it was a sound depending for its production wholly on the connate imperfection, and rendered more striking by its special complication with pulmonary obstruction, impeding the natural course of the circulation.

The cause of murmurs in connexion with the right auriculo-ventricular opening has its origin in anatomical changes affecting the valves, and interfering with their normal action of closing the auricular orifice, and thus preventing regurgitation. Whether this change manifests itself in thickening and contraction, adhesion to the walls of the ventricle, in vegetative exudations, or in rupture of the regulating tensors of the valves (chordæ tendineæ), the effect on the functions of the right cavities of the heart is the same, producing analogous physical manifestations; and as these alterations constantly attend on the very condition which existed in this case, it would appear to afford *primâ facie* evidence that in this situation lay the source of the murmur. But unfortunately the anatomical condition of the valves negatives the conclusion, as the tricuspid curtains were perfectly adequate to the performance of their accustomed function, the only trace of disease present being three small apertures, of which one was most certainly accidental, and all were in such a position that they could not possibly allow the most trivial amount of regurgitation to occur, unless that inconsistent and justly exploded idea, that the valves at each systole of the ventricle are thrown down horizontally across the opening which they protect, still continues to receive credence, —an opinion derived probably from observation on the aortic valves thrown across their opening by a column of water. But the auricular valves are far differently circumstanced. Instead of being merely subservient to a column of fluid straining them from a vertical to a horizontal direction, they are amenable to the vital action of the carneæ columnæ, which act, not to horizontalize them, but simply to oppose their inner aspects, a cir-

cumstance demonstrated by the removal of the anterior wall of the right ventricle in a rabbit under the influence of chloroform, or killed by a sudden blow on the back of the neck, when it will be then evident that a small aperture in one valve must of necessity be closed by the opposite curtain during the systole of the ventricle. Where tricuspid regurgitation exists, the right auricle is sometimes larger than its corresponding ventricle, but generally there obtains a relative equality in the cavities as to size, while in this case the ventricle exceeded the auricle by a fourth at least. Now this excess in the capacity of the ventricle, in comparison with the auricle, would seem scarcely to invalidate the supposition of regurgitation, as a part of the regurgitant blood might have escaped through the septum auricularum into the left auricle, and thus destroyed the usual parity of size between the right cavities. This mode of explanation would, however, involve an increase in the capacity of the left auricle, consequent on the greater amount of blood entering it, but there did not exist any such dilatation which might warrant us in arriving at such a conclusion. Further, if regurgitation did really occur, venous congestion of a persistent character would have manifested itself, as well as venous pulsation of the jugulars, so well marked that it could scarcely have eluded the observation of the physician during life, but such phenomena are not recorded in the notes, and must consequently have been absent.

The murmur, then, could not arise at the auriculo-ventricular opening: firstly, because there was present in that situation no morbid change sufficient to account for it; secondly, because the condition of the auricle was in an inverse ratio as to size with the ventricle when compared with that cavity; and, thirdly, because the signs referrible to the veins did not exist.

The second cause to which the murmur might be attributed is the dilatation of the aorta immediately above its origin. The increase is scarcely appreciable, but, as it has been

suggested as the cause of the abnormal sound, it is but just that its probability should be examined and discussed. It is difficult to account for this increase in capacity of the ascending aorta, unless it arose from the pressure of the tubercular lung on the descending portion of its arch, a circumstance I have often noticed in the dissecting-room; and this is far more probable than that it originated from patency of the ductus arteriosus permitting a flow of blood from the aorta into the pulmonary artery, this condition being only remarked in cases of occlusion of the latter vessel at its origin, when the circulation functionally resembles that of reptiles. To produce this peculiar state, three conditions are absolutely requisite, whether congenital or acquired: firstly, occlusion of the pulmonary arterial orifice; secondly, patency of the foramen ovale, or deficiency of the septum ventriculorum; and thirdly, patency of the ductus arteriosus. But the pulmonary artery was in this case quite healthy, and although, when describing the heart, it is mentioned that there was a disparity between the vessel and its cavity, still, when it is remembered that the child frequently laboured under impending suffocation, and that the right ventricle must have been engorged at the period of dissolution; combined with the fact that the heart's cavities undergo dilatation much more rapidly than the blood-vessels which are connected with them, this apparent contradiction can be reconciled. Moreover, in order to produce the murmur, there should be a disparity between this dilatation and the aortic opening, which was not the case. But the gravest objection is the position of the murmur. It was most audible at the ensiform cartilage, but was not to be heard in the course of the sternum, passing in an upward direction. If, therefore, it were aortic, it should have become more audible in the ascent, and not in the descent towards the right edge and apex of the heart. The objections to this being the seat of the murmur appear then to be, firstly, the equality in size of the aortic orifice and the tube

above the heart; and, secondly, the position of the murmur as to its audibility.

Permanent patency of the foramen ovale cannot of itself be invested with too much importance, but when it occurs as a complication of other disorders, the diagnosis of its existence forms a subject of material moment in the study of disease; and, therefore, any circumstances calculated to throw light, even approximatively, on its discovery, should receive some attention. So long as cyanosis was considered to be an unavoidable concomitant of this arrest of development, the non-existence of this sign was considered as a sufficient proof of the normal condition of the septal wall of the heart, but since the observations of Louis and Cloquet have demonstrated the fact that patency does not invariably produce cyanosis, nor is cyanosis always the effect of such deficiency, the opinions entertained on this subject have been considerably modified, and its recognition has been rendered doubtful, and probably conjectural. From this may have proceeded the dubious remarks of auscultators, as they express themselves on the value of physical signs in cardiac abnormities, and their hesitation to assign distinguishing characters to them. As the abnormity may differ in position, it cannot be denied that such signs must be subject to considerable variations, but this is a condition equally common to all such evidences of disease continuing so long as physical phenomena are produced and influenced by the constantly altered force of vital actions. But, even if a comparative value can be attached to any signs or symptoms as indicatory of a single pathological condition, though its occurrence cannot be prevented, or its consequences averted, still its recognition must always confer an indisputable advantage on differential diagnosis. The eustachian valve in this heart was exceedingly large, and concealed the inferior caval opening. No signs of reticulation were present, which would indicate that the modelling process, by which parts of no further use in the economy are

removed, had commenced. Meckel had noticed this persistence in several cases in connexion with imperfect auricular septum. The foramen ovale was patulous, and its inferior third occupied by its proper valve, which was, no doubt, sufficient to close it in infancy, but now was merely stretched across, its inferior third becoming quite tense during the dilatation of the auricle. Hence I infer that during the diastole of this chamber, a portion of the blood of the inferior cava, in passing into the left auricle, played on the margin of the valve of the foramen ovale, and produced the systolic murmur. Still, the question naturally suggests itself here,—was this murmur continuous from birth to the period of death, or was the patency of the opening merely secondary to the disease of the lung? I am disposed to agree with Abernethy, that, under certain diseased conditions, the fossa ovalis is again capable of becoming a free opening. To permit of such an occurrence it is essential that the valve should not be adherent to the annulus at its upper border, and that there should be some pulmonary obstruction present, and in this case it is most probable that such was the course of events: first, obstructive disease of the lungs; second, dilatation of the right side of the heart: the septum auricularum participating in the distention, the diameter of the fossa ovalis was rendered greater than the valve; third, communication between the auricles, with or without cyanosis. This view may in some measure account for the rapidity of the disease and the severity of the symptoms.

There are, no doubt, many objections to this mode of accounting for the murmur, but even those which are apparently the most probable are refuted with facility, and proved to be fallacious. These objections are, first, that the murmur, if venous, ought to have been continuous; second, that according to this explanation the left auricle should have been dilated; and third, the non-development of cyanosis in a marked degree, although commixture of venous and arterial blood is admitted.

The first objection is negatived by the fact, sufficiently well known, that the intra-pericardial portions of the venæ cavæ correspond in rythmical movements with the auricles, rendering a period of repose in a murmur connected with them as explicable as if its source lay in the auricular openings or arterial trunks. The force of this objection would, however, be quite admissible in all veins where the current wave is continuous, but the cavæ are the exception to this rule. It has also been suggested that the left auricle ought to have been in an inverse proportion to the right in size, if the blood passed directly to the left side from the inferior cava; but by a little reflection it will appear that, in order to reach the left auricle, the blood must necessarily pass through the right, and thus be common to both; therefore, a disparity as to size would be unnecessary, and an argument drawn from it totally inconsistent with reason. The absence of cyanosis would seem, on superficial investigation, to militate against the rationalè of the murmur, as, in order to produce it, I admit that an admixture of the arterial and venous bloods was required, but Louis distinctly denies that this admixture is the cause of cyanosis, attributing it to an impeding of the return of venous blood to the right side of the heart; and whilst there are so many objections to the opinions entertained on this subject prior to his observations, it would certainly be straining the argument to assert that in this case cyanosis must have been present. In reptiles, where impure blood circulates in every structure, the tissues are not the less white, nor are the tegumentary coverings of the fœtus marked by a cyanotic tinge, although the blood at that period must necessarily partake more or less of a venous character, at least in the lower extremities. Besides, the sudden appearance and rapid decline of cyanosis in patency go far to prove that its presence or absence possesses but a slight physiological import in these deficiencies. But even here, in this child, when the cough produced violent efforts at expiration, the nails and face became purple, and an immediate subsidence of this condition occurred

as the respiration became free again and unembarrassed. In the absence, therefore, of any valid objection, I do not conceive it improper to consider this explanation a legitimate addition to the recognised causes of cardiac murmurs, and if this paper may have the effect of directing the attention of others more competent to the task to devote their labours cautiously, and without prejudice, to the examination of similar cases, studying the laws of nature in disease with the single object of assuaging pain and averting human suffering, my only desire will be attained.

Art. V.—*Notes on Cases of Syphilitic Meningitis.* By Thomas Read, M. B., L. R. C. S. I., Belfast.

"Lues Gallica, licet quasvis fere partes corporis occupet aliquando, frequentius tamen superiora invadit. . . . . unde et inclusum his encephalum pessime afficitur, et varii capitis morbi sequuntur. Sæpe observantur cerebri læsiones in lue Venerea inveterata, a levissima vertigine, ad lethalem apoplexiam usque: pessimam Epilepsiam, cæcitatem, surditatem, &c.

"Possunt oriri tumores gummosi, et exostoses, in calvariæ osseæ parte interna, quæ premendo cerebrum, omnes ejus functiones turbant."—Gerardi van Swieten *Commentarii.* Lug. Batav. 1772, vol. v. p. 404.

"On the *post mortem* examination we found the dura mater firmly adherent to the cranium, and also to the visceral layer of the arachnoid, for an oval space, two inches in the long, and an inch and a half in the short diameter. At this point the dura-mater was three or four times its natural thickness; below the two layers of the arachnoid there were two large masses of yellow colour, like concrete pus, opposite to which were corresponding depressions or concavities on the surface of the cerebral hemisphere; at these points the cerebral substance was slightly softened, and redder than natural; at the same point, on the opposite side of the skull, a similar morbid alteration in the dura mater and arachnoid was commencing.

"Symptoms of this case before death:—Great loss of memory; fits; imperfect paralysis of right side, and pain of right parietal region."—Dr. Todd, *Clinical Lectures, Medical Gazette,* January, 1851.

For above thirty years no disease has obtained more of the attentive inquiry of surgeons than syphilis, especially in its primary and secondary forms. The announcement of a plurality of poisons, and that venereal sores would heal, and syphilis at

any of its stages might disappear by an unaided effort of the constitution, aroused the wonder, and invited to similar investigations many surgeons throughout Europe, and subsequently wherever civilised man has made his habitation on the earth. It has been a great epoch in medical history; but it may be asked, is our knowledge complete and settled after so protracted an inquisition? The latter positions—the healing of venereal sores, and the disappearance of syphilis without the intervention of mercurial action—is an established fact. The plurality of poisons is still "sub judice," a controverted and unsettled point, either to confirm or confute which would need a systematized course of rigid experiment never yet carried out. Mr. Carmichael maintained, that the uniformity of syphilis in infants, no matter what the original form of disease of the parent (whether papular, pustular, or phagedenic), did not militate against his doctrine; neither did a common assemblage of symptoms in the tertiary forms of the disease in the adult seem to him to oppose his assumption of the plurality of poisons. His reasonings are to me far from conclusive, and his facts seem to be at variance with his theory. In the morbid phenomena of the other animal poisons (small-pox, scarlatina, measles, &c.), we constantly observe great diversity of external appearance, with constant and regular repetitions of the same diversities; we recognise them as influenced by the existing state of the constitution of each individual at the time he contracts the poison. May not the individual constitution likewise modify the external phenomena in syphilis? If the concluding series of visible and constitutional symptoms resolve themselves into identity, is it not a strong ground of credence of unity at the origin? Those who wish to examine this question in its present equivocal and unsettled state, I would refer to the able and impartial statement of Mr. Aston Key, contained in his Report on Syphilitic Sores in Guy's Hospital Reports[a].

[a] Vol. iv.

The history of the cases appended to this paper has suggested these observations.

Among the most remote and latest signs of constitutional syphilis are those of cerebral origin, and to them I would desire to give a prominence and interest, that their deep importance entitles them, and their frequent obscurity requires, the more especially as those who seek for information in modern works and lectures, will find either a bare allusion to such symptoms, or entire omission of any notice of them. M. Ricord, alluding to the "*action of the osseous affections on the neighbouring parts*," thus speaks:—"Another consequence of this species of compression is epilepsy; but this otherwise formidable disease is in such cases easily got rid of. The fits commonly seize the patient when the osseous growth producing the compression gets more considerable and irritating. I must not omit to mention paraplegia as a casual effect of tertiary syphilis in the bones; the nervous disturbance is then the result of an osseous lesion, which latter begins by circumscribed nocturnal pain, and is developed very slowly. Paraplegia may also be produced by a cutaneous, elastic tumour; but I need hardly say the latter is never preceded by the gnawing pains which generally usher in osteitis." Mr. Acton[a] merely quotes this extract from M. Ricord: on the disorder of the mind they are both silent. I wish here to refer to a clinical lecture delivered by Dr. Todd, of King's College, on the difficulty of diagnosis in tertiary syphilis. "The patient had contracted syphilis fourteen or fifteen years ago, and had a chancre and a bubo. He took a large quantity of mercury without medical advice, and was freely salivated. From many consequent evils attendant on this disease he seems to have escaped pretty well, and no unfavourable symptoms occurred till five years ago, when he applied to one of the metropolitan hospitals for contraction and rigidity of the flexor muscles of the right fore-

[a] A Practical Treatise on Diseases of the Urinary and Genital Organs. By William Acton. Second Edition, 1851.

arm, and numbness of the same region. The nature of this case *was mistaken*, and, after leaving this, he went from *one hospital to another, but got no relief.* A friend gave him a prescription which cured him. It was hydriodate of potash. Mr. Bowman recognised the disease."

I may observe, that the clinical lectures of Dr. Todd possessed great interest for me, as our observations were so perfectly independent of each other. His remarks on the liability to error in diagnosis, the almost unvarying success of treatment under clear diagnosis, the occasional indispensable resort to mercury, so fully correspond with my own experience, that I cannot but feel support and confidence in submitting the cases appended, as illustrative of the necessity for additional inquiry, and for an endeavour to obtain a more exact diagnosis, which cannot fail to insure treatment more successful.

Case I.—*Syphilitic Meningitis; Paraplegia; Hemiplegia; Amaurosis; Difficulty of Articulation, with Mental Hebetude.*

Mr. F., in July, 1847, was accompanied to my house by a surgeon of Belfast, who was naturally alarmed by the rapid advances of paralytic and other cerebral symptoms in his case. The patient required to be supported on his feet while his clothes were removed from the upper part of his person. His speech, from difficulty in articulation, was very imperfect; his powers of arranging his ideas and memory were slow and defective; vision very imperfect in both eyes. The gentleman who accompanied him had known him for some time. He had been treated for years by another surgeon for secondary syphilis,—chiefly intractable ulcers on the limbs, face, and head; and on these parts there were several large cicatrices. He had placed himself under the former gentleman's care for progressively increasing amaurosis; the paralytic symptoms supervened, and rapidly advanced until he exhibited the aggravated and almost hopeless state of general paralysis in which I saw him. The history of the case, his countenance, and general appear-

ance, led me to the impression that all the symptoms might be assigned to compression of the brain by development of syphilitic tumours of the dura mater; but as this could not be a certain diagnosis, and to guard against an error in judgment, I considered the rapid exhibition of mercury to be the safest course. I therefore advised the entire scalp to be shaved, a blister applied immediately over it, and one drachm of strong mercurial ointment to be rubbed in on any convenient surface twice a day. But I apprehended a speedy appearance of coma, and a necessarily fatal result.

Some eight days afterwards I saw his surgeon, who told me that our patient had made a rapid recovery, and was then able to run up and down the steps of a very steep staircase. To my additional surprise, a well-looking, dark man, with clear and expressive eyes, addressed me one day in the street, and, asking me if I did not know him, brought to my recollection the visit of himself and his medical attendant to my house less than three weeks before. He was completely recovered, looked in full health, had perfectly regained his powers of motion, vision, and articulation, and was in full possession of all his faculties. Mercury here released every oppressed organ, gave flesh and strength by restoring the animal functions, and afforded one of the happiest triumphs of medical art over disease I ever witnessed. Death must rapidly have closed the scene, had not this powerful and efficient agent arrested its course.

Remarks.—This patient was about thirty-two years old, with eyes, hair, and complexion as dark as any native Italian; well formed, naturally of a very robust frame, and with the semblance of a good constitution. About four years before I saw him, after a suspicious intercourse, a bubo formed in the groin. No sore or cicatrix was seen on the penis. He placed himself under a well-educated and skilful surgeon, who thought it advisable, notwithstanding the absence of chancre, to administer mercury for some time, under the use of which the bubo

disappeared. After he had discontinued mercury, it again formed, and burst while he was engaged in active exercise. Some months subsequently he was attacked with an eruption which produced intractable ulcers. His surgeon treated him without success, as to their healing, for many months, until he went to the sea, and then they healed while he was using the open sea-bath.

It is worthy of observation, that here we have a bubo without chancre. This bubo was certainly not phagedenic, yet was followed by what I conjecture to have been rupia.

Whether a man be a mercurialist or a non-mercurialist, he may admit it to be quite true that the ulcerative forms of syphilis do not encourage the employment of mercury; but I feared to rely on hydriodate of potash in a case of such extreme emergency. And I must add that I still have to acquire the enthusiastic confidence of M. Ricord in its unerring dominion over tertiary syphilis.

The patient has since been well able to pursue his business in life, but has suffered many of what Ricord calls the accidents of tertiary syphilis; he has had many attacks of cranial pain, want of sleep, pain, enlargement of bones and joints, and very lately he has had double sarcocele; all have, more or less readily, yielded to the hydriodate of potash. The doses are now raised to half a drachm three times daily. He has the confirmed syphilitic diathesis; but he makes out life '*versus*' disease, with good grounds to expect his constitution will finally surmount his malady; his life has never, since the paralysis, been in the slightest danger.

Case II.—*Syphilitic Meningitis; Mental Incompetence; Incoherency; Suicidal Propensity; Paralysis.*

Mr. M., a gentleman about twenty-six years of age, was attacked with hemiplegia of the right side while travelling in a night mail. His intellect was disordered, and he was incapable of appreciating his own state and directing accordingly. A cler-

gyman, who lodged in the same house, requested me to see this gentleman about eighteen hours after the attack. He informed me, that some months before he had observed incomprehensible ramblings in his conversation, and the expression of strange and incongruous ideas. This had become apparent in the course of his daily occupation, one of trust and considerable mental labour; and the head of the establishment had placed him under the care of his own physician, a gentleman of experience and in extensive practice, who considered it requisite to have *every means for self-destruction removed out of his reach.* After some length of treatment, he advised change of scene, and all the adventitious aid of new associations and amusements, if possible to change the current of his ideas. He went to friends in London, and while there, they deemed it requisite to induce him to place himself under the care of a physician, who (on what ground I do not know) prescribed for him hydriodate of potash, with decoction of sarsaparilla, which he used for about five weeks. He returned, in some measure improved, and resumed his official duties. He was on business connected with his office, and returning home, when he was seized with paralysis. All this I learned from the clergyman, whom motives of humanity induced to take a great interest in the matter. He was aware that the invalid had formerly been under my care, and that I probably had a more intimate knowledge of the private history of his life than any one else. In fact, he had come to me with an excavated syphilitic ulcer of the throat more than twelve months before. I was dissatisfied with his want of steadiness in following my directions, and he broke off attendance before I dismissed him. In some months after he again called on me for advice. He had syphilitic iritis of both eyes. There was no eruption. He again returned to his employment, earlier than I advised. Considering the antecedents, and the slow progress of his cerebral symptoms, which I count as significant of intra-cranial syphilitic disease, I believed that his disease was syphilitic menin-

gitis, with deposition. I took blood from the arm, had the head shaved and blistered, gave active purgatives with tartar emetic, and, after the free action of the bowels, began the use of mercury. In about four days mercurial action was established, the disease rapidly disappeared, and there was a perfect restoration of his mental and bodily functions.

Remarks.—It may be alleged, that the treatment for paralysis was in accordance with that usually employed, which is by no means disputed. It is the antecedent condition of mental disturbance, the length of time it existed in a chronic state, without being amenable to treatment by the ordinary remedies, its mitigation under hydriodate of potash, and the previous history, which seem to me to justify the assumption, that syphilitic tumour of the dura mater was the cause of this cerebral irritation. The perfect disappearance of every symptom, under mercurial action, in a period incomparably shorter than that in which cerebral disease, originating from causes of more usual occurrence, would have disappeared, confirms me in that view. As this gentleman, soon after his recovery, emigrated to a very distant region, such incontrovertible testimony of the fidelity of the diagnosis cannot be adduced as substantiates that of the previous and the following case. I only know, that some months after his arrival in the country of his adoption, in a letter to a friend he expressed the warmest feelings of obligation and gratitude to me for the enjoyment of perfect restoration to health. A drier, warmer, and more equable climate is undoubtedly among the agents capable of overcoming the syphilitic diathesis.

Case III.—*Syphilitic Meningitis; Epileptic Seizure; Intermittent Cranial Neuralgia; Mental Derangement; Paralysis of the Sphincters.*

Mr. I. T., aged forty years, while with a coursing party on a mountain, suddenly fell, became insensible, and was much convulsed. The insensibility, his companions say, lasted half-

an-hour. He then gradually recovered, without any deprivation of the power of motion or of sensibility. He was seen by a physician on his return to his friend's house. Nothing, I believe, was prescribed, except some aperient medicine, and caution as to regimen. When he came back to Belfast, and called on me, he looked ill and cachectic. I advised him to resume the hydriodate of potash, which he had before used for various tertiary syphilitic symptoms. He improved again in health, until a subsequent period of about three months, when, on a journey, he sat in wet clothes for more than three hours. He did not apply to me until four days afterwards. He then complained of pain of the head; his countenance looked pallid and cachectic; his pulse was soft and undulating (an unfilled artery) and slow; the points of the fingers very pale and cold, the nails blueish, denoting an imperfect capillary circulation. He said he required a good purging and he would be well enough; as he had been living freely I consented. Active purging brought no relief; the cerebral pain became aggravated, and he had no sleep. He was ordered a full opiate, after which he slept well; but the pain in the head now came on in paroxysms, with intermission; I then prescribed for him quina, and continued the opiate at night.

The pain of the head in its extreme intensity resembled neuralgia. He had nights of distracting suffering, and no relief obtained except from quina and opium. I next ordered for him ten grains of hydriodate of potash in solution every sixth hour. His suffering increased, and he became so excited under the want of relief, and his friends so exceedingly alarmed, believing the attack must end in apoplexy, that I obtained the assistance of a physician who was familiar with his case for some years. This gentleman entirely concurred with me as to the impropriety of bleeding (which was urged by the patient and his friends); and also that our only dependence, on the failure of the iodide of potassium, was in mercury, which formerly saved his life. The vertex was shaved, and extensively blistered,

and half a drachm of mercurial ointment rubbed in night and morning. Generous living was directed, with animal food and wine. The blister was dressed with a weak ointment of tartar emetic. On the fourth morning the gums became florid (previously the gums and mucous membrane of the mouth much resembled those of an anemic female), with decided relief of all the symptoms, but no mercurial fetor. We continued the mercury for a fortnight, but did not obtain satisfactory evidence of its constitutional action, except the perfect subsidence, from the fourth day, of all his distressing sufferings, when he refused to continue it any longer; we therefore advised him to resume the hydriodate of potash, as before directed.

Six weeks after the last attendance I was asked to visit this gentleman again. His disorder had now assumed a different character. He ceased to take an interest in any of his former pursuits; he never spoke except when addressed, and then said "he was not ill," and had no pain whatever. It was observed that he fell asleep whenever he sat down, he also slept during the night. Occasionally he took up a book, but it was very apparent he made no mental effort to comprehend the contents. In this state he remained, with little change, for several days, then it was observed that he had lost reckoning of time as to the day of the week, the hour of the day, whether he had taken his meals, &c. When he spoke he believed persons long dead to be alive in the house. At last a disposition to be violent and excitable caused much alarm. He, however, quietly submitted to have his head shaved and a blister applied, and he was ordered ten grains of the hydriodate of potash every sixth hour. He had not the slightest pain; there was no fever; his skin was cold; pulse low and very feeble, sometimes scarcely discoverable at the radial artery. The mental disorder having exhibited more marked evidence of its nature by acts of a more public character, it became necessary to have him placed under strict observation, but without restraint. The sphincters of the bladder and rectum then lost their power; which, with

other threatening symptoms of cerebral engagement, determined us once more to have recourse to mercury, which again, though more gradually, was attended with the happiest results. First the sphincters resumed their power: the pulse became developed; he took food; his mind recovered its coherence and correct perception, but his manner was torpid and indifferent. On account of the anæmia, he got ten drops of muriated tincture of iron three times a day. Although one drachm of mercurial ointment was well rubbed in night and morning, its sensible action was limited to a slight turgescence and florid colour of the gums; otherwise its effect was only shown by retrocession of all the morbid symptoms, and progressive regeneration of health. In three weeks the rubbings of mercurial ointment were discontinued, and he took corrosive sublimate, gradually increased to one grain a day, in compound tincture of bark. He remains in health now more than a year, and has resumed active bodily exercise, which he had given up for several years.

Remarks.—My knowledge of this case commenced about six years ago. The patient had then an eruption, scaly and papular, which his surgeon (since dead) considered to be syphilitic; he himself discredited that view of its nature. I agreed with his surgeon. The patient said he had taken decoction of sarsaparilla and hydriodate of potash until they excited so much loathing that he refused to take more. He was then, by direction of his surgeon, using hydriodate of potash in pills. I advised mercury, but it was not given. Three years after this period I saw this gentleman, in consultation with a physician, his personal friend, who had seen him occasionally under very much broken health; he complained of great pain and difficulty in swallowing; it came on gradually, and increased so much, that when I saw him he declared deglutition to be impossible, and had nearly abstained from food, even liquids. He was without sleep at night, and in a state of the most abject despondence. His physical powers were so prostrate (although he had been a remarkably muscular, energetic man)

that he was wheeled about in a Bath-chair; his colour was quite pallid, and of a peculiar leaden tinge; pulse feeble; he was in fact sinking under the combined effect of inanition and deprivation of sleep. His voice was snuffling, like that of a sufferer under syphilitic disease of the nasal passages; yet the closest examination showed no ulcer of the throat, fauces, or nose. All the mucous membranes were particularly pale, that of the pharynx extremely tumid and swollen, and the *isthmus faucium* much contracted. Externally, beneath the inferior maxilla, in the sub-mental space, there was a large cluster of absorbent glands filling it up; at the lateral parts on both sides of the neck there were many of the glands enlarged, altogether throwing great obstacles in the way of an examination of the throat; over the mastoid process of the left temporal bone there was a distinct tumour of the pericranium, which had softened, and contained matter. After very mature deliberation, I came to the conclusion that the disease was syphilitic cachexia. The physician who was associated with me gave me his full concurrence and support, and we agreed to introduce mercury into the system with the greatest caution. Fifteen grains of mercurial ointment were rubbed every night on the inside of the thighs; a full opiate was given at night, and as much fluid aliment as he could be induced to swallow; on the third morning mercurial fetor was apparent. Before the mercury acted, great alarm was caused on two successive nights by suffocative spasm of the larynx, which caused us infinite anxiety, and rendered it necessary to have a medical man sleeping in the house. The fourth morning ptyalism was so marked as to forbid the next friction. All the symptoms were diminished; periosteal abscess much smaller; glands reducing, and unmistakeable improvement in deglutition. Afterwards it was a case of steady progress to the twelfth day, when he was going about, perfectly recovered in his own opinion. All his symptoms were removed, no doubt, and he was strong and able to walk about freely. He refused any further treatment.

In less than three weeks the glandular tumours had returned. He blistered himself on the throat, as to this measure he attributed his late recovery; but the glands still increased, and he again submitted to be treated. He objected so strongly to use the ointment, that we gave the medicine internally,—the green iodide of mercury with hemlock and opium. All symptoms again rapidly subsided, but he complained of colicky pains, and much depression. Notwithstanding his complaints he improved daily in flesh and strength, and indulged an excellent appetite. We still urged the continuance of mercury, though all traces of disease were removed, except the residue of the glandular tumours beneath the lower jaw. He determined, however, on going to Dublin for advice, and there placed himself under a surgeon of the highest eminence. In Dublin it was doubted that the disease was syphilis; he got gentle tonics, with a very nutritious and stimulant diet, and his night opiate was discontinued. At the end of two months his bodily vigour had again decayed; he abandoned all medical treatment, and to the eyes of his friends he appeared to be sinking. He was now induced to leave Dublin and go to the neighbourhood of Kingstown. The change of air and a wonderful effort of the constitution raised him out of his extreme debility; his appetite returned, and he quickly rallied; in a month he came back to the north of Ireland.

After six months of good general health, a new train of tertiary symptoms commenced. Elastic tumours formed in the areolar tissue, external to several muscles, over the biceps, the deltoid, and the pectoral. They soon disappeared under the administration of the iodide of iron. The next distinctly syphilitic symptom was double sarcocele, which yielded to a few leechings (when there was much pain), hydriodate of potash internally, and iodine ointment to the testicles. Several relapses followed. Hydrocele supervened, but all the symptoms were removed and restoration of both testicles brought about by iodine treatment.

For about two years Mr. T. enjoyed excellent health, with occasional threatenings of renewed symptoms. Iodine was to him a specific; and his general health became so good under it, that, on one occasion, he took it without interruption for four months. The dose was progressively raised from five to twenty grains, three times a day, but on the supervention of intra-cranial disease, the remedy became powerless.

Mercury was not administered, either for the primary or secondary symptoms. For the syphilitic cachexia only nine or ten frictions of fifteen grains each were used; for the relapse, thirty grains of the green iodide of mercury in twenty-one days.

The practical conclusions I would deduce from the foregoing cases are very obvious. First, That a single symptom of cerebral disturbance, such as some form of mental disorder, may alone indicate the organic mischief in progress; a cachectic countenance may excite suspicion of its nature; but a close investigation of the previous history of the patient's diseases and symptoms are required to affix its true character. Secondly, That the employment of mercury, in this late stage of syphilis, is unattended with those formidable consequences of which we are so strongly forewarned as forbidding its use. It is true, mercury never was pressed much beyond the disappearance of symptoms, and whenever employed, it was as the last resource of extreme peril and emergency, all other means having failed. But no measure of bodily exhaustion, even such as I feel the feebleness of words to represent, has deterred me from its employment once I had discriminated the disease, guarding myself, however, by a measure and method of use appropriate to the case.

I subjoin here the following contrast and comparison of mercurial action on the constitution of patients suffering from primary and tertiary syphilis.

When mercury has been administered for a primary sore,

in a constitution of unexceptionable health and vigour, it will not be disputed that its action will always be marked by physical reduction and depression. There will be loss of flesh and weight; muscular elasticity and power will diminish; the countenance becomes pale; the skin clear, and prone to perspire on slight exertion; the intellect unfitted for sustained effort. All these will occur, although the diet be adequately nutritious and abundant for a person in health, and moderate exercise and exposure to the atmosphere be still permitted. But under confinement, all these constitutional evidences of mercurial action become more aggravated, together with in all, ordinarily, some degree of mental depression, and in some, alarming physical and mental prostration. In fact mercury in all cases visibly acts as a poison in a lower or a higher degree. Under this constitutional ordeal, the animal poison which is secreted by the sore is in some inexplicable mode neutralized, or prevented from entering into the circulation and contaminating the system. Such is a feeble and imperfect outline of the phenomena indicative of mercurial action in a sound person affected with a primary sore. But all these phenomena are directly reversed when the body has long sustained the inroads of the syphilitic poison, under which the powers of the constitution become prostrated. The more advanced the stage, the wider the range of involvement, the more signally does mercury, if *appropriately and judiciously employed at the right conjuncture*, exhibit its strange conversion into a tonic, and its prompt and most decided action as a restorative. All the functions of life are rapidly roused into vigorous effort—refreshing repose revisits the patient, worn with pain and exhausted by sleepless nights—appetite and digestion return—blood is quickly regenerated—the muscles recover tone and power—the eyes lose their dull and desponding cast, and resume brilliancy and expression—the mind becomes hopeful and exhilarated—flesh and weight are added, yet no medicine has been administered

except mercury. How to explain and reconcile these antagonising agencies I do not purpose to attempt: the facts I have repeatedly witnessed in several other forms of syphilitic cachexia, independently of the cases now related.

Art. VI.—*Aneurisms of the Arteria Innominata ; their History and Differential Diagnosis from Aneurisms of the Arch of the Aorta.* By T. S. Holland, M. D. Edin., M. R. C. S. L., Corresponding Member of the Parisian Medical Society, and Lecturer on Pathological Anatomy, Cork.

Among the many problems in diagnostic medicine requiring solution, not one probably possesses so high a practical or scientific interest, whose history has remained so long unwritten, and whose diagnosis rests on a basis so inaccurate, as that which forms the subject of this paper; and, while much must of necessity have escaped my notice, in a search for materials widely scattered through the medical periodicals of Europe and America, still I trust, that the earnestness of this attempt to fill up a gap in our medical literature will plead for these deficiencies.

The works of Hodgson and of Guthrie do not contain even an account of the cases of innominata aneurism on record when they wrote; Wardrop, in his book on Aneurisms, offers some suggestions regarding the diagnosis of these affections; but it is to Dr. Crisp's work on the Diseases and Injuries of the Blood-vessels that we must refer for accurate statistical information, as well on this as on all diseases belonging to the same category.

The literature of this subject, in French, consists of the following inaugural dissertations: M. King's, 1828; M. Poyer's, No. 100, 1839; M. Beistegui's, No. 195, 1841; and M. Lesage de Lahaye, No. 58, 1845.

M. Velpeau, in his article on Subclavian Aneurism, in the Dictionnaire de Médecine, vol. xxviii. p. 466, refers to some

of the cases of aneurism of the innominata, already published by M. Roberts, in his monograph, "Sur les anévrysmes de la région Sus-claviculaire, 1842," as well as to those quoted by M. Beistegui. It is to M. Dubrueil (Professor to the Medical Faculty of Montpellier), however, that we are indebted for the first important suggestions regarding the diagnosis of these aneurisms from those of the arch of the aorta[a].

In the Theoretisch-praktisches Handbuch der Chirurgie, by Rust, vol. ii. page 57, we find a short article on innominata aneurism. Neither Morgagni nor Scarpa have left us even pathological details of these lesions, and, as far as I can learn, there is no article on this subject in Italian. It is imperative on any one, before taking the diagnosis of this disease into consideration, to collect all that has hitherto been laid before the medical world on the subject; for, if it be true that successful treatment depends upon correct diagnosis, and that this latter can only be effected by having an accurate knowledge of the history of disease, it becomes a matter of all importance that, before we inquire what are the characteristic phenomena of these aneurisms, we should place some ground under our feet; empiricism in practice being less dangerous than generalization made on imperfect or insufficient data. This must be my apology for the following extracts from the English, American, French, German, and Italian journals, condensed as much as is consistent with accuracy.

No. 1. Mr. Wardrop's *Case, from Lancet for July*, 1827, page 465[b].—Mrs. A. aged 45. A pulsating tumour, the size of a turkey's egg, presents itself in the neck, at the inner side of the sterno-mastoid muscle, its base being under the upper portion of the sternum. No pulsation can be discovered in any of the branches of the right carotid artery, although they have been most minutely examined; but in those of the left the circulation is extremely vigorous. The

[a] I have to thank Professor Dubruèil for having, at great personal trouble, forwarded to me the last copy of his work, entitled, "Observations et Réflexions sur les Anévrysmes de la Portion Ascendante et de la Crosse de l'Aorte, 1841."

[b] The conclusion of this case is given in the second volume of the Lancet for 1828-29, page 788.

contents of the thorax were found to be in a healthy condition, except at the upper part of the sternum, over a confined space under the clavicular edge of the sterno-mastoid muscle, where a *bruit de soufflet* could be heard. There was severe pain through the left side of the head and neck, with a throbbing sensation in the tumour. She has at times great difficulty of respiration, and her nights are very restless; countenance expressive of great anxiety; pulse frequent, full, and throbbing. The disease commenced eleven years ago with difficulty of respiration, cough, and severe pains in the chest, head, and neck, which she considered to be rheumatic. Five months afterwards, she observed a pulsating tumour above the sternum, which has increased rapidly during the last three weeks, and the integuments covering the apex of the swelling have within a few days become painful. A fortnight ago, pressure had been made on the humeral artery by means of Mr. Searle's instrument, to diminish the current of blood through the aneurismal tumour; but the patient could bear the necessary pressure only for a short time. The subclavian was tied July 6. On the 8th of August, 1828, no tumour was perceptible in the situation of the aneurism, but a feeling of hardness was perceived at the root of the neck, arising, no doubt, from a condensation of the aneurismal tumour. Pulsation had returned in the right carotid, but with much less force than in that on the left side. The right radial artery beats with about half the strength of the left; the pains in the neck, shoulder, and back have disappeared for some time; her feet are no longer œdematous, and she takes exercise daily. About three months after, a tumour arose immediately above the sternum, occupied the centre of the neck, and some months after that a second tumour appeared, occupying the site of the right carotid artery, and extending up the right side of the neck, while its base united with that of the other tumour. She died 13th September, 1829. *Post mortem.*—The aneurism extended from the origin of the innominata to its bifurcation. The aorta, of the natural size, had a few points of ossification on it. Right carotid pervious and quite healthy. The subclavian is divided, and both ends closed where the ligature had been applied. The tumour, as large as a turkey's egg, occupied the central space between the two sterno-mastoid muscles, adhered firmly to the sternum, and had caused absorption of a portion of that bone.

No. 2. Mr. Evans' *Case*, *Lancet*, 1829, page 187.—A butcher, aged 30, very athletic, enjoyed perfect health up to the period of an attack of bronchitis, when, in a paroxysm of coughing, on the 10th March, 1828, a soft pulsating tumour, the size of a walnut, appeared, covered externally by the sternal portion of the sterno-mastoid muscle. The force of its pulsations was increased by making pressure upon the right subclavian artery, while pressure on the right carotid, diminished or even sometimes completely arrested the pulsations. Right carotid and subclavian pulsate stronger than those on the opposite side, but the radial arteries appear to be of equal strength. The cough and dyspnœa ceased to be troublesome

as soon as the tumour appeared. Chest sounded well on percussion, and the respiratory murmur was distinctly audible at all points. A loud pulsation was heard over the tumour, unattended by any unusual sound. Mr. Evans diagnosed, that the root of the carotid was the seat of the disease. Valsalva's treatment was used, but as the tumour continued to increase in size, it was considered advisable to tie the carotid on the 22nd July, 1828. After the operation the pulsation of the tumour continued as before. During the two following days the pulsation was stronger than before the operation, and the right radial artery beat more forcibly than the left; on the third day he became feverish, pulse 120. On the 29th July (the seventh day after the operation) the right pulse became weaker than the left, intense pain was complained of in the course of the axillary and brachial arteries, which ended in the obliteration of these vessels. The right arm wasted, became partially paralysed, and not until the end of the third week were the anastomosing vessels seen pulsating on the back of the hand; as these vessels enlarged, sensation and volition slowly returned. The same set of phenomena occurred in the course of the right carotid; the right side of the head and face becoming emaciated, and remaining so for some time. Salivation set in without apparent cause on the 29th July, and continued until the middle of September. In the first week of October, the tumour is reported to be hard, firm, diminished a third of its volume, and pulsation scarcely perceptible, even on pressing deeply. On leaving his bed for the first time, a general numbness and debility of the right side was observed, which entirely disappeared thirteen weeks after the operation; but his temper remained irritable and his memory was evidently weakened. From the 22nd October, he attended market regularly at a distance of seven miles, and finally recovered his usual health.

No. 3. Mr. Ray's *Case*, *Lancet*, 1835, page 498.—A sawyer, aged 52, although a hard drinker, enjoyed good health until struck by a heavy piece of timber on the upper part of the chest, which threw him forcibly backward against the axle of a waggon. Since this accident he always complained of a constant, dull, gnawing sensation at both of the points where he had been struck. Various treatment was used, and in September his sufferings increased, dark coagulated blood being frequently ejected during fits of coughing. He soon became unable to use the left arm or lie on the left side, and finally could not remain lying down. On 12th November he coughed up a large quantity of blood, became comatose, and died. *Post mortem.* —Left pleural cavity full of blood; the lower part of this lung had an appearance resembling the spleen, and in its interior was a cavity capable of containing two ounces of fluid. A large aneurism arose from the descending aorta between the sixth and eighth dorsal vertebræ; it had completely absorbed two inches of the seventh rib and half-an-inch of the eighth. The entire of the innominata formed one vast aneurism the size of an orange, on whose anterior surface was found

an ulcerated opening large enough to admit an egg; the sternum had been so much absorbed that it broke transversely on being raised.

No. 4. Mr. Fearns' *Case*, *Lancet*, 1836, page 129.—A female, aged 28, soon after a violent fit of coughing, felt a throbbing swelling above the sternum; on her admission to the Derby Infirmary, a rounded pulsating tumour was seen immediately above the sternum, bounded laterally by the trachea and the tracheal margin of the sterno-mastoid, evidently making pressure on the trachea near its bifurcation, as evinced by loud wheezing, frequent cough and difficulty of breathing. A loud *bruit de soufflet* was heard in the supra-clavicular space, and a less distinct *bruit* along the course of the common carotid. The *bruit* in the subclavian artery was rendered louder by stopping the passage of blood through the carotid; but when the circulation through the subclavian was arrested, the *bruit* in the carotid ceased. The tumour itself emitted sounds similar to and synchronous with those of the heart. The pulse in the right wrist was very indistinct; that in the left being of the natural strength and frequency. Pressure on the carotid rendered her breathing in a marked degree more free; the same experiment applied to the subclavian did not alter the respiration in the least; but on another occasion, pressure on the subclavian increased her difficulty of breathing. When both vessels were compressed at the same time, the relief was much about the same as experienced when the carotid alone was pressed upon. Mr. Fearns, therefore, selected the carotid for operation, and put a ligature round it, August 30th. A month after: the patient sleeps well; walks out every day; her difficulty of breathing is entirely removed; the tumour still pulsates distinctly, but pressure upon it does not give rise to dyspnœa or inconvenience of any kind; she returned home at her own request.

No. 5. Mr. Maxwell's *Case*, *Lancet*, 1841, page 594.—A compositor, aged 41, a few days after lifting a considerable weight, felt stiffness and pressure at the upper part of the chest. Mr. Maxwell, on examining him, perceived a slight swelling above the sternum, pulsating strongly; no cough; breathing free. The author says: "I then saw it was an aneurism of the arteria innominata;" but as an hospital surgeon in consultation stated it as his belief, that the disease extended to the arch of the aorta, medical treatment was alone had recourse to; the patient sank gradually, and died 3rd July, 1841, not from the bursting of the aneurism, but from exhaustion. *Post mortem.*—An aneurismal sac, the size of a large lemon, arose from the innominata, and formed close adhesion to the sternum. The orifice from the artery into the sac was three-quarters of an inch in length and a quarter in width. Its margins were rounded as if it was a natural opening. The aorta, heart, and other viscera were healthy, with the exception of some serum effused into the pleura and pericardium, as the result of great debility.

No. 6. Dr. Whiting's *Case*, *Edinburgh Medical and Surgical Journal*, vol. xvii. page 81.—A man, forty years of age, whose general health

had been good, about three years previously to his death laboured under constant difficulty of breathing, which was much increased by all muscular exertions. He was troubled with a harsh, crowing cough, and expectorated much mucus, sometimes streaked with blood. To these symptoms were added, difficulty in swallowing solid food, and intense darting pain extending from the front of the ear along the right side of face and head; feels faint if he sits up for more than fifteen minutes. A short time before death the pulse at the right wrist was found intermitting; the left was not examined. He was subject to frequent attacks of catarrh, which invariably aggravated his sufferings; the strongest muscular efforts being often necessary to carry on respiration. At last, nature seemed to be exhausted in the effort to maintain the action of the lungs, and he died with catarrhal symptoms.—*Post mortem.*—The muscles of the chest and abdomen were unusually large and florid; the intercostals being particularly so; the bronchi were filled with mucus, and their mucous membrane slightly inflamed. An aneurism of the innominata lay behind the upper extremity of the sternum, and a little to its right side; perfect union had taken place between the sac and the trachea, the cartilages of which had been absorbed, and a smooth, red, oval tumour appeared within the tube, diminishing its caliber by more than half. (This paper is illustrated by two well-executed drawings, showing the anterior and posterior view of the tumour.)

No. 7. Dr. Auchincloss' *Case, Edinburgh Medical and Surgical Journal*, vol. iv. page 338.—A plumber, aged 64, had been in the habit of carrying heavy loads of lead on his shoulders. Immediately behind the sterno-clavicular articulation was a strongly pulsating tumour, somewhat larger than a hen's egg; extending in the course of the carotid and subclavian arteries to the inner edge of the scaleni; there was no pulsation in the subclavian beyond the acromial side of these muscles, in the axilla, nor anywhere down the right arm; there being numbness and frequent shooting pains in this limb. Frequent dry, tickling cough, hoarseness of voice, and dyspnœa prevented sound sleep. In April, 1833, he became affected with pain in the right shoulder, which he considered as rheumatic, and about the same time a tumour, the size of a Spanish nut, appeared above the clavicle, near to the sterno-clavicular articulation. In October he fell from a scaffold, and from that period the tumour increased in size, and the pain in intensity, until the beginning of June, 1834, when it was fully one-half larger than a child's head at birth, occupied the entire of the right side of the neck, from the clavicle and sternum to the lower margin of the jaw, had pushed the larynx and trachea nearly two inches to the left side, and finally became conical, with three nipple-like projections on its surface. He died on the 20th June, while raising himself to expectorate. Almost immediately after death, the aneurismal swelling began to subside, and in less than an hour the cyst was empty, presenting a great hollow depression, with thickening around its circumference, particularly at the lower part. *Post mortem.*—The sterno-mastoid was very

much stretched, pushed to the right side, and partly spread over that portion of the circumference of the tumour; the aneurism was found to engage the upper two-thirds of the innominata, the whole length of the common carotid to its bifurcation, and the subclavian to the inner edge of the scaleni. The dilatation involved the whole circumference of the carotid and subclavian, while the tumour on the innominata engaged only the anterior half of its circumference. The posterior aspect of the aneurism was close to the spine, and had pressed the larynx and trachea fully two inches to the left side; the posterior surface of the upper end of the sternum and inner half of the clavicle was partly absorbed, with destruction of the corresponding part of the cyst anteriorly; in this situation there was a considerable deposit of laminated coagulum. The subclavian was obliterated to an extent equal to the breadth of the scaleni, and so completely incorporated with these parts as to form apparently one structure. The innominata, beyond the seat of the disease, as also the aorta, was greatly enlarged. The upper lobe of the right lung was adherent to the lower and posterior part of the innominata. Considerable effusion existed on both sides of the chest; the bronchi contained much puriform mucus, and their inner lining was very red. The immediate subsidence of the aneurismal swelling after death, which was supposed to be caused by rupture having occurred internally, is to be explained, by the fluid contents of the sac receding towards the aorta, and passing readily into the large vessels of the chest and abdomen. The severe hemicranial pain, which he said was the most distressing symptom, is accounted for by the overstretching of the sterno-mastoid muscle, and the consequent pressure made on the spinal accessory and descending branches of the portio dura.

No. 8. Dr Henderson's *Case, Monthly Journal of Medical Science*, 1843, page 453.—A woman, aged 59, suffered from palpitations for eight years; a violent attack of vomiting rendered them much worse, and she felt at the time as if something had given way within her chest; since then she complained of pain in the cardiac region, and great difficulty of breathing. Five months before, she was seized with a paroxysm of cough, which returned at intervals up to the time she was seen; it had been since the cough came on, that she noticed a swelling below the sternal end of the right clavicle. On admission to the Royal Infirmary of Edinburgh, a pulsating tumour was seen, commencing immediately above the cartilage of the third right rib, extending two inches above the sternal end of the right clavicle, and outwards to an inch and a quarter from the right sterno-clavicular articulation. Dulness on percussion all over the region occupied by the tumour. Above the clavicle a very obscure murmur was heard accompanying the diastole of the tumour, below the end of the right clavicle, a feeble, musical cooing sound began to accompany the systole of the tumour, becoming more distinct towards the fourth left cartilage; the cooing character of the sound was only occasional, the second sound, near the fourth left cartilage, being for the most part a bellows murmur, and both these sounds became

feebler, the more the apex of the heart was approached. A lengthened interval was at times to be distinguished between the stroke of the heart and the radial pulses; this interval becoming longer as the action of the heart became quicker. Pulse rarely intermittent, but stronger in the right than in the left wrist. She died soon after, and the *post mortem* examination showed the heart to be dilated, especially the left ventricle; one of the aortic valves had become folded back, and allowed of regurgitation; the aorta was somewhat dilated, and the innominata transformed into an elongated sac, the size of a large pear, its communication with the aorta being of considerable size.

No. 9. Dr. Campbell's *Case, Monthly Journal of Medical Science*, 1845, p. 45.—An intemperate soldier, aged 48, suffered for years from pains in his right shoulder, and right side of neck and head. A fortnight before he consulted Dr. Campbell, while splitting wood with the axe at full stretch above his head, he felt something give way in the lower part of the neck, attended with sudden gasping for a few seconds, and on putting his hand to the part he found a small pulsating tumour, which he would not have noticed but for its rapid growth. Dr. Campbell discovered a pulsating tumour lying transverse to the axis of the neck, appearing at the tracheal as well as at the external side of the sterno-mastoid muscle, and to be felt pulsating within the chest, as low as the cartilage of the second rib. Compressing the right carotid artery arrested pulsation in the tumour; pressure on the right subclavian produced the same effect, but in a less marked degree. The radials, subclavians, and carotids pulsated equally strong on both sides. The right subclavian space sounded dull, and over this region a double pulsation was heard, growing weaker as the heart was approached and acccompanied by a very slight *bruit de soufflet;* but neither thrill nor *bruit* could be heard in the tumour above the clavicle. Aneurism of the innominata was diagnosed, and as compression on the carotid had the greatest effect in restraining the circulation through the tumour, it was determined to tie that vessel, which was accordingly done on 8th March. For some minutes after the ligature was tied the aneurismal swelling entirely disappeared; however, only a short time had elapsed before it returned, but to a less extent than before the operation. Severe pain in the right side of the head, and dilatation of the left pupil occurred immediately after the tightening of the ligature; cough and feverishness set in three hours afterwards, and a bleeding was used with advantage; and he went on well until the 23rd, when fever returned, with slight delirium; heart acting most violently; when blood was again taken, and he seemed relieved until the 27th; he was then seized with intense dyspnœa; his face became livid; pulse 150, very small, and two pulsating tumours were felt rising one on each side of the sternum. He died the same evening. *Post mortem.*—A tumour was found occupying the superior portion of the right side of the chest, and extending half-an-inch beyond the centre of the first bone of the sternum. The aneurism commenced at the root of the innominata, involving the entire of its anterior wall to within a quarter

of an inch from its bifurcation, and also the transverse portion of the arch, to where the left carotid was given off, its origin being slightly dilated. The sternal ends of the clavicle and of the first rib were denuded of their periosteum, and the first bone of the sternum was deeply hollowed out by the pressure of the sac. The remains of two small pouches arose from the large tumour, one anterior and the other posterior; the sacs of these aneurismal pouches were found empty and collapsed. The entire of the aorta, as low down as the diaphragm, was dilated and contained ossific deposit; the right carotid was nearly divided, and plugged by a firm coagulum for two inches below the ligature. The superior part of the right lung was condensed from the pressure of the tumour; the left lung in the first stage of pneumonia; the left ventricle hypertrophied; aortic valves healthy.

No. 10. Mr. Lyon's *Case, Monthly Journal of Medical Science*, 1847, page 229.—A man, aged 43, suffered for the last six weeks from pain in the back of his neck and right shoulder; two weeks since there was observed some swelling at the lower part of the neck. A strongly pulsating tumour, the size of a small fist, occupied the neck, from the right side of the thyroid gland to the sternum, and extending laterally under the inferior portion of the sterno-clavicular muscles; pressure diminished the size of the sac, but it again expanded as soon as the pressure was removed. Pulsation of the carotids normal, that of the right subclavian and radial scarcely to be felt. No *bruit* at any part of the tumour; action of heart healthy; no dulness on percussion, or absence of respiration over any part of the chest. It was agreed in consultation, that the tumour depended on dilatation of the innominata, and Brasdor's operation was proposed; but the patient would not submit to it. Pressure was applied by means of a half-circle of steel-spring, with a button and screw over the vessel, and a plate for obtaining counter-pressure behind, sufficiently large to avoid the lateral part of the neck; he was directed to use the apparatus as often as possible, and firmly enough to interrupt pulsation in the temporal artery of the right side. Previously to applying this instrument, he had been twice bled, and was put on the use of digitalis and acetate of lead, with low diet, rest and purgatives; all these were continued, except the bleeding. On the 27th December, 1843 (being the twenty-fifth day after the use of compression), the tumour had diminished in size; it pulsated much less forcibly; was much firmer and undiminished by pressure; pains less troublesome; voice not so hoarse, and swallowing easier. Right subclavian pulse smaller than at the former examination; he uses the collar generally for an hour and a half at a time, and in all for about eight or nine hours in the twenty-four. January 4th, 1844: Health good; pains gone; voice and deglutition normal; pulse small and soft, 80; pulsation in the sac scarcely perceptible; right carotid patent; radial permeable, but its pulsations exceedingly weak. Suffers no inconvenience from the pressure of the instrument. December 24th: A cast was taken and compared with one that had been made just twelve

months before, when it was found that the tumour had diminished two-thirds in all directions.

July, 1845: Gets constantly drunk; is often very violent; all treatment now neglected; he died suddenly on the 26th July. *Post mortem.*—The aneurismal tumour, the size of a cocoa-nut, formed by the innominata (the aorta being very slightly involved) extended from the cricoid cartilage to the arch of the aorta; its parietes on the right side are as thin as writing paper, and in them is a rent an inch long, through which fatal hemorrhage had occurred into the right pleural cavity. Above, the tumour is closely attached to the sterno-clavicular articulation and filled with fibrine; the other parts of it contained soft coagulated blood; below, the sac is fused into the commencement of the arch, and the left carotid arises from its lower and anterior border. The right carotid and subclavian arteries are both pervious, arising from its upper and posterior part.

No. 11. Dr. Wishart's *Case, Monthly Journal of Medical Science*, 1848, p. 496.—A labourer, aged 40, stated he had lost his voice from cold. "On applying the fingers over the clavicles, a distinct murmur was perceived extending up the neck; over the superior part of the sternum a strong impulse, accompanied with a *bruit*, was felt, synchronous with the stroke of the heart." The pulse in the right wrist was barely perceptible. Together with these symptoms of aneurism, he had acute bronchitis, for which he was more immediately treated, and discharged from the Middlesex Hospital in the beginning of August, 1844. When seen by the author on the 17th August, 1844, his symptoms were, great dyspnœa, suffocating cough, inability to raise his voice above a whisper, moist râles over both sides of the chest, a strong impulse felt over the top of the sternum, and the pulse in the right wrist not perceptible. The treatment was directed towards the disease of the lungs; he was put on very low diet, and took small doses of acetate of lead daily for some weeks. Towards the end of this year, only a very slight impulse could be felt over the sternum. He had repeated attacks of hemoptysis connected with the state of his lungs, which were then in an advanced stage of phthisis; for a month before his death (which occurred on the 21st of February, 1845), no pulsation could be felt in either of the carotids; but for how long previously to that time it was absent, the author could not say.

Post mortem.—Both lungs full of tuberculous cavities; the aneurism involved the whole of the anterior of the innominata, and had been spontaneously cured, the innominata being entirely obliterated; the sac of the aneurism (larger than a duck's egg) was completely filled with compact fibrine, deposited layer on layer, so as to fill the interior to the level of the aorta. The orifice from the aorta into the innominata was as large as a crown-piece; the aorta was also somewhat expanded, and there existed an extensive deposit of atheromatous matter in its coats. Fibrine occupied a small extent of the interior of the aorta, so as completely to cover the orifice of the left carotid, which, together with the right carotid and subclavian, was

entirely blocked up; the left vertebral and subclavian arteries were somewhat enlarged. The right common carotid was slightly contracted and filled with fibrine for about four inches above the aneurism. The right subclavian and the branches of the thyroid axis, vertebral artery, &c., were pervious, and of their usual caliber. The tumour adhered firmly to the front and right side of the trachea, and had slightly diminished its size; the mucous membrane of this part of the air-tube was of a reddish brown colour; a few points, about the size of pins' heads, were raised, as if at one time the aneurism had a disposition to burst into the trachea. The pneumogastric nerve adhered closely to the sac in front, and was considerably stretched. (The preparation is in the Museum of the Medical Department of the Army, at Chatham.)

No. 12. Mr. Luke, Surgeon to the London Hospital, has kindly forwarded to me the following particulars of a case, treated by him in private practice:

A shoemaker, of short stature, between thirty and forty years of age, was supposed to be labouring under rheumatism of the right shoulder, and had been treated in conformity with that opinion. On examination, Mr. Luke found a pulsating tumour, as large as a moderately-sized orange, above the right sterno-clavicular articulation, which he immediately recognised to be aneurismal. Ten ounces of blood were taken from the arm, cold lotion applied to the swelling, and digitalis administered internally; the diet was also restricted, but not very rigidly. The bleedings were repeated; first at short, afterwards at longer intervals, the quantity drawn being each time gradually diminished, until not more than four or six ounces were taken; this being found sufficient to control the force of the circulation; the pulse was carefully watched, and the bleedings regulated by its strength, care being taken *never to carry it so far as to distress the patient, or induce a feeling of nausea.* This treatment extended over some months, the pulsations of the tumour, which even from the first began to diminish, eventually disappeared altogether, leaving merely a fulness of the part in their place. The patient survived (what Mr. Luke concluded to be a cure) for two years, and died from an attack of phrenitis. The preparation is in the London Hospital Museum, and shows the aneurismal sac, commencing from the innominata just before its division into the carotid and subclavian arteries, extending forwards and a little outwards, overlying the anterior scalenus muscle, and covered by the lower extremity of the sterno-mastoid. The right carotid artery is impervious, but the subclavian would admit blood to pass through it; the sac is laid open by incision, and its cavity is seen to be *completely* filled by a uniformly dense fibrinous mass, without any central space, containing soft coagulum; it is, therefore, permanently closed against any admission of blood from the arteries.

No. 13. Dr. Hughes' *Case*, *London Medical Gazette*, 1838, page 205.—A man, aged 40, had suffered from cough for five years, and observed a pulsating tumour above the right sterno-clavicular arti-

culation six months ago. When seen by Dr. Hughes, "he presented the general symptoms and physical signs of aneurism of the arteria innominata, together with consolidation of the upper lobe of the right lung, and a feeble heart." About a fortnight after, the tumour disappeared during the night, and could never again be discovered; at the same time dyspnœa increased, the expectoration become more abundant, and was for two or three days tinged with blood; dysphagia now for the first time appeared; still he lived for four months after the disappearance of the tumour.

Post mortem.—The upper lobe of the right lung, consolidated from old pneumonia, contained in its centre an irregular cavity, and a few scattered tubercles. From the right side of the innominata proceeded an aneurism, as large as a chesnut; from its left side, and partly from the arch of the aorta arose another aneurism, as large as a hen's egg, pressing upon, and having an ulcerated opening into the trachea. To the left of the left subclavian was a third aneurism, as large as a walnut; the ascending aorta was much enlarged and diseased; the right subclavian was also enlarged; the right carotid natural; the left carotid very small, and its mouth completely closed; the mouth of the left subclavian also had been recently, but entirely, closed by the pressure of the aneurism near it.

The three following cases were laid before the Royal Medical and Chirurgical Society by Mr. Shaw. *London Medical Gazette*, 1840, page 518:

No. 14. A sailor, aged 50, admitted under Dr. Budd, May 9th, 1839. When first seen, no tumour was apparent, but a pulsation was felt at the upper part of the sternum, and under the sternal end of the clavicle; still the hollow space below the clavicle, and the depression between the insertions of the sterno-mastoid were more filled than natural, and pain was complained of when these parts were pressed. The superficial veins in front of the neck, on the right side, were preternaturally dilated. The pulse could not be felt in the right arm, either above the elbow or at the wrist, while in the left arm it was strong, beating 76. The pulsation of the carotid and temporal arteries was equally strong on both sides; pain in the right side of the neck to some distance upwards, and numbness of the right arm; voice hoarse, and he was troubled with a dry, teasing cough; slight difficulty in swallowing. He stated that he had been ill for four months, and that the pain (where the pulsation was felt), together with the hoarseness, came on suddenly. Two months after his admission, the sternal end of the clavicle appeared pushed forwards, and in December a tumour rose above the clavicle, and also descended below it; that bone forming a depression in its centre; orthopnœa; voice as low as a whisper; right arm and hand œdematous, acute pain in them beside numbness. Later in the case, the œdema extended to both arms, neck, and face; he constantly repeated "that the pain in the right arm would drive him mad;" the tumour increased, the skin over it became red, and rupture exter-

nally was expected; he died January 22nd, 1840, exhausted from pain and dyspnœa.

Post mortem.—The tumour was eight inches in length, measured obliquely from its origin at the root of the innominata to within three inches of the acromial process of the clavicle; reaching four inches above the sternum, and extending as many inches below that bone; one lobe of the tumour descended into the chest, as low as the third rib; another pouch projected backwards, so as to press on the trachea. The clavicle was perfectly detached from the sternum, and moved freely in the centre of the tumour, surrounded by coagulated blood; a portion of the first rib and sternum were likewise absorbed. The innominata came off from the arch, of its normal size, and then immediately dilated into the aneurism; a small aneurism, large enough to contain a nutmeg, was formed in the arch immediately above and behind the orifice of the innominata; so that part of the parietes of that vessel formed the septum between the great aneurism and this smaller aortic one. The right carotid was normal, opening obliquely into the sac; the orifice of the right subclavian was completely obliterated, nothing but a slight depression marked its former position; it was impervious for half-an-inch from the sac, but when it reached the axilla, its caliber was of the usual dimensions. The vertebral artery, the thyroid axis, and internal mammary were impervious at the point where they were given off from the subclavian. The right axillary vein was found behind the tumour, diminished to the size of a crow-quill, it was seen to enter the walls of the sac, and to be gradually lost in their substance; no vestige of the right subclavian vein could be found to mark where it joined the right vena innominata; the jugular and brachiocephalic veins were also remarkably contracted; the left brachiocephalic vein encircled the fore-part of the tumour, and was so small as not to allow a No. 10 bougie to pass along it. The axillary plexus of nerves was involved in the walls of the tumour at its back part. The areolar tissue which surrounded the nerves had the appearance of being inflamed: it was infiltrated with serum, and even partly broken down, to form an abscess. The right par vagum was traced into, and lost in the walls of the sac; the recurrent nerve was flattened by, and involved in the parietes of the aneurism, but it was impossible to say whether these nerves preserved their continuity to their destinations.

No. 15.—A man, aged 33, admitted to the Middlesex Hospital, in March, 1838, under Dr. Watson's care; his countenance was remarkably turgid, and eyes projecting; veins of the ears, lips, and nose of a purplish colour; the jugulars unusually full: the superficial veins all over the chest and abdomen enlarged; but those on the right side were more tortuous than on the left. Independent of the fulness caused by the blood-vessels, there was a distinct tumid appearance in the neck, above both clavicles, produced (as was found upon dissection) by an enlargement of the lymphatic glands situated there.

The pulse at the wrist was considerably smaller and weaker on the right than the left side. No external tumour, having any pulsation, could be perceived, although the most careful examination was made. About the middle of the upper portion of the sternum the ear, at each systole of the heart, was distinctly jarred, though with less force than in the precordial region; but in the space intermediate between these two points, no similar jarring sensation was perceived; nevertheless, the heart could be heard beating at this part, accompanied by a slight bellows sound. Dr. Watson considered, that the jar communicated to the ear at the upper part of the sternum indicated the swelling out of an aneurismal pouch in that situation, when the sac was filled by the contraction of the heart. He died five months after admission, and for the last three or four days he suffered under the symptoms of acute pericarditis, by which he was carried off.

Post mortem.—The sac was the size of two fists laid together. It communicated with the arch of the aorta, by an opening which corresponded to the orifice of the innominata, enlarged to about twice its natural size. The internal jugular veins of both sides, near their junction, with the subclavian veins, were completely closed by adhesion of their coats. The subclavian veins were only obliterated at the point where they were joined by the jugulars. Both brachio-cephalic veins, besides having their canals closed at their commencement, were entirely obliterated where they unite to form the vena cava superior, and lost in the parietes of the sac. A part of the right thoracic duct, about three inches in length, was obstructed at its termination, and ended in the closed brachio-cephalic vein. The great thoracic duct had been injected in the abdomen previously to the dissection, and was traced along the posterior mediastinum as far as the tumour, where it became so much involved in the dense textures situated there, that it was lost sight of. In this extent, its appearance did not present any thing preternatural. The glands of the neck were so enlarged, that they occasioned a perceptible fulness in the lower part of the neck during life. The glands of the axilla, groin, and mesentery were also enlarged. A layer of reticulated lymph was found on the surface of the heart, and the pericardium contained a quantity of reddish brown fluid.

No. 16.—A man, aged 44, admitted to the Middlesex Hospital, September 1, 1851, under Dr. Wilson's care, stated that he had been ill for two months, but had not been entirely free from pain for the last thirteen years. While in hospital he suffered from dyspnœa, and he could only speak hoarsely in a whisper; there was also some difficulty in swallowing; veins of the face and neck turgid: the head, neck, and superior extremities became greatly œdematous, while the lower parts of the body were quite free from it. *Post mortem.*—The aneurism arose from the innominata midway between its origin and its bifurcation, and measured in its greatest length (which was in the direction upwards), very nearly five inches, and in its transverse about three inches and a half; it was filled to four-

fifths of its extent with concentric layers of fibrine, which gave to the whole tumour a hard and solid feel. It reached upwards along the trachea, so as to overlay the lower part of the thyroid gland; and had partly absorbed the right clavicle and the upper part of the sternum. The openings of the carotid and subclavian were not in the least enlarged, neither was the opening from the aorta into the innominata. The right subclavian, internal jugular, and brachio-cephalic veins were obstructed by fibrine; the latter vessel wound round the lower part of the tumour in front, and was diminished to the size of a crow-quill. Some fluid in the pericardium; heart healthy; ascending aorta very considerably dilated, and atheromatous deposit on it.

No. 17. Mr. Key's *Case*, *London Medical Gazette*, 1844, page 334.—Mr. Key attempted to pass a ligature round the innominata, but had to desist on account of a tumour attached to that vessel. The patient died on the twenty-third day after. Dr. Hughes had given it as his opinion, that the innominata was engaged in the disease, while the other physicians considered the arch and the innominata to be healthy. *Post mortem.*—The tumour which prevented the completion of the operation was an aneurism of the upper part of the innominata, including the origin of the subclavian; the carotid being comparatively healthy. The sac, together with a mass of diseased glands, pressed on the right bronchus, and had by its pressure been the immediate occasion of the fatal termination.

No. 18. Mr. Greenhow's *Case*, *London Medical Gazette*, 1851, vol. xviii. p. 726.—A sailor, middle-aged, admitted to the Newcastle Infirmary, presenting a pulsating tumour at the right side of the neck, each pulsation throwing the shoulder forwards, as if it formed part of the parietes of the tumour. The sounds of the heart were heard very distinctly in the tumour, and a deep, faint *soufflet* heard most audibly at the scapula. *Post mortem.*—The innominata was dilated and diseased at its origin from the aorta, as well as where it expanded into the immense aneurismal sac, which extended on the right side from near the ramus of the jaw down to the third rib. A cast of the tumour had been taken, which showed it to measure eleven inches from side to side, while it projected three inches from the neck. The clavicle and two superior ribs were completely corroded and divided into two parts.

No. 19. Dr. Stokes' *Case*, *Dublin Medical Journal*, First Series, vol. v. p. 406.—A shoemaker, aged 34, muscular development, admitted into the Meath Hospital, December 29, labouring under cough, difficulty of breathing, with pain in the chest, head, and neck. The night after admission he was attacked with hemiplegia of the left side. He had in general enjoyed good health, although subject to attacks of shortness of breath (particularly after any effort), with numbness of the right arm. Left side almost totally deprived of sensation and motion, while the mouth was drawn to the right side, and the tongue protruded to the left. Complains of violent pain in the right side and back part of the head and neck; difficulty of swallowing; cough

of a laryngeal character, with pain in the chest. Pulse 84, full in the left wrist, but exceedingly indistinct in the right, nor could any pulsation be detected in the brachial or axillary artery on that side. Decided dulness at the sternal extremity of the right clavicle. Respiration in the left lung intensely puerile, but exceedingly feeble in the right. On applying the stethoscope to the sternal extremity of the right clavicle a very loud double pulsation was discovered, with a strong impulse, but diminishing in intensity as the heart was approached; the sounds and impulse of which were natural. No *bruit de soufflet* could be detected in any part of the chest. On pressing the fingers behind the right clavicle, a small pulsating tumour could be felt in the direction of the arteria innominata. On the 25th January the tumour extended about an inch above the clavicle, was bounded internally by the mesial line, and externally by the posterior border of the sterno-mastoid; yet the dysphagia had diminished, notwithstanding the increase in size of the tumour. The superficial veins of the head and neck, particularly on the right side were greatly engorged. The size of the sac increasing, the right side, of the face, as well as the paralytic arm, became œdematous, while the right arm and lower extremities continued free from œdema; the trachea was pushed far to the left side, so that the larynx corresponded to a line drawn from the middle third of the left clavicle: intense bronchitis in the left lung. *Post mortem.*—An abscess, containing about an ounce of purulent fluid, was found in the middle of the right hemisphere of the brain. The size of the external tumour had much diminished; the larynx, trachea, and œsophagus, which, previously to death, were nearly in a line with the middle third of the left clavicle, were now more in a line with its sternal extremity. The aneurism was of the arteria innominata, and occupied the entire of the anterior wall of the vessel; it arose at first narrow (two inches in circumference), then increased to the bulk of a large cocoa-nut. The right side of the trachea was so flattened as almost to prevent the passage of air; the right carotid and jugular vein, on the posterior surface of the sac, were flattened and obliterated; the right and left venæ innominatæ were flattened and completely obstructed on the anterior surface of the tumour. The left carotid and subclavian arteries were unaffected; but the right subclavian was pressed so flat at its immediate origin that no blood could have passed from the innominata, though there appeared to have been a reflex current by anastomosis, as the artery was gaping immediately after its origin, and quite healthy; the aorta was found somewhat dilated and its coats thickened; the vagus nerve was also flattened. The apex of the lung was much compressed.

No. 20. Dr. Stokes' *Second Case, Dublin Medical Journal*, First Series, vol. xv. page 303.—In the case from which the preparation (which was laid before the Dublin Pathological Society) was taken, there had not been any dislocation of the clavicle; an aneurism of the arteria innominata had displaced the trachea, and folded it upon itself. The voice was of quite a different character from that heard

in true laryngeal disease; its tone being scarcely the same for two days, varying from the deepest bass to a shrill treble, or becoming almost extinct.

No. 21. Dr. Hutton's *Case, Dublin Medical Journal*, First Series, vol. xxv. page 499.—A man, aged 47, enjoyed good health up to March, 1841, when he was attacked by pain in the right shoulder and clavicle, which gradually extended up that side of the neck to the ear and head; a dry cough began in June, to which succeeded difficulty of swallowing. In November his strength failed, and there was perceived a small pulsating tumour under the sterno-mastoid muscle; on his admission to the Richmond Hospital, in April, 1842, the tumour was situated a little to the outside of the sternal attachment of the sterno-mastoid; there was no *bruit de soufflet;* the right radial pulse was somewhat less than that at the opposite wrist; he suffered from bronchial cough and dyspnœa, but the dysphagia had become less as the tumour had risen above the sternum.

After his admission the pulse became smaller; the tumour increased in size, passing across the middle of the neck, its diameter across the neck being two inches, and from above downwards only an inch and a half. The right carotid was tied June 27; for several days the size of the tumour gradually diminished, and the dyspnœa became less, until, on the twenty-second day after the operation, when hemorrhage occurred from the wound, and this returned; on the thirty-eighth day he had rigors and convulsive motions resembling epilepsy; these recurred on the forty-first. On the following day the tumour had increased in size, pulsated more strongly, and the sputa were bloody. A sudden enlargement of the tumour occurred on the sixty-fifth day, accompanied by syncope. He died the seventy-sixth day from the operation.

Post mortem.—There had not been any attempt at union in the artery, it had ulcerated through where the ligature was applied; above this point there was atheromatous deposition in the vessel. The aneurismal tumour of the innominata (containing purulent matter and grumous blood) projected into the trachea, blood passing into the air-tube through a very small opening; the aorta was not dilated, but had some atheromatous points on it; the left vertebral artery came off from the arch of the aorta; the left subclavian was healthy. A large conical coagulum, of an inch long, filled the right carotid; a coagulum existed in the right subclavian, evidently older than that in the carotid.

No. 22. Mr. Wickham's *Case, Medico-Chirurgical Transactions*, vol. xxii. p. 405.—A sailor, aged 55, admitted to the Winchester Hospital, September 17, 1839. Six months ago he observed a swelling, the size of a hazel-nut, above the middle of the right clavicle, without pulsation or pain; it disappeared in about eight days, and re-appeared four weeks before his entering the hospital, presenting itself just above the sternal end of the clavicle. On his admission, the swelling had attained the size of a hen's egg; it seemed that the tumour extended over the carotid artery at its lower

part, and reached as high as the transit of the omohyoid muscle; it inclined also somewhat towards the subclavian artery, had all the characteristics of aneurism, and that of the innominata; his health was injured by continued pain and difficulty of breathing. Sir A. Cooper confirmed the diagnosis, that the disease was of the innominata, and sanctioned the tying of the carotid and subclavian. On the 25th September the carotid artery was tied immediately above the omohyoid muscle; the pulsation in the tumour continued, but with less force; the trachea was almost immediately relieved from pressure by the reduced size of the tumour, the troublesome cough and dyspnœa being thereby considerably lessened. Before he submitted to the second operation his appearance was very wretched, difficulty of respiration extreme, cough very frequent, deglutition much impeded, and the tumour more than double its original size. The subclavian was tied December 3rd, the ligature came away on the 25th; he left the hospital on the 5th February; hemorrhage occurred on the 15th of the same month, and death from another bleeding on the 16th.

Post mortem.—Heart large, and loaded with fat. Pulmonary artery and superior cava greatly enlarged, the entire of the thoracic aorta greatly dilated; nearly half of the innominata occupied by the origin of the aneurism; clavicle and sternum partly absorbed, and the former dislocated; right subclavian artery obliterated from the clavicle to the first rib; right carotid obliterated from just above the upper edge of the omohyoid. The aneurismal sac reached as high as the upper part of the thyroid cartilage, and had burst upon its left side, though it projected most upon the right.

No. 23. Mr. Lawrence's *Case, Medico-Chirurgical Transactions*, 1815, vol. vi. p. 227.—A woman, under 20, admitted to St. Bartholomew's Hospital, having been a fortnight ill, her only complaint being, a great difficulty of drawing air into the chest, amounting to a sense of suffocation, coming on in paroxysms, in the intervals of which she was free from all complaint. She died asphyxiated on the night after her admission.

Post mortem.—An aneurism of the innominata was found situated behind the first bone of the sternum, and pressing on the trachea so as to render it convex on its inner surface, but diminishing its caliber in a very slight degree. All the other organs were healthy.

No. 24. Burns' *Surgical Anatomy of the Head and Neck*, p. 62.—An officer, who had seen much laborious service (having risen from the ranks), complained of numbness of the left arm, and an unpleasant sensation in his head; he was suddenly seized with acute pain over the first rib on the right side, and a tumour was found beneath the clavicular portion of the sterno-mastoid muscle, but nearer the acromion than the muscle; it pulsated strongly: the right radial pulse was weaker than the left, the right common carotid was also feebler than the left. In December, 1809 (two months after the above report), the tumour was much flattened; a peculiar thrilling

sensation was felt along the subclavian, vertebral, and common carotid arteries; frequent paroxysms of pain along the right side of the head, and constant numbness of the left hand. Towards the end of January, 1810, the right hand became slightly œdematous, and slowly lost power, assuming a permanently purplish colour. Aneurism of the subclavian was diagnosed. On the 22nd March the tumour suddenly increased greatly in size, extending laterally outwards, the clavicle was forced away from the sternum; there was no actual difficulty in breathing, but the patient said he "was short-winded;" voice becoming gradually impaired; the tumour still increasing in size, particularly towards the left side; he began to suffer from the dysphagia; voice raucous; pains extended to the left shoulder; and on the 10th October (four days before his death), his face was œdematous, streaked with purple veins, and lower limbs anasarcous; voice lowered to a whisper; still, difficulty of breathing and want of sleep were the chief subjects of his complaints, together with a hollow cough.

Post mortem.—The aneurism arose from the aorta, including a considerable part of the innominata, having in its ascent pushed the descending vena cava to the right, and the trachea to the left, pressing the right subclavian and the carotid against the spine. The trachea was so much displaced that the left carotid slanted across its front to reach the side of the neck. Left ventricle hypertrophied, aortic valves ossified. The arch of the aorta was dilated, and the œsophagus pushed completely from behind the trachea. (From the two plates that accompany this case it was evidently a good example of aneurism of the innominata).

No. 25. Mr. Pattison's *Case*, Burns' *Surgical Anatomy of the Head and Neck*, page 427. (This case forms the first note in the Appendix.) —Mr. J. M'C., enjoying excellent health up to the autumn of 1816, when he was attacked with what his medical attendants considered as rheumatic pains in the lower part of the neck, which was repeatedly examined without any thing being discovered, and the opinion of the rheumatic nature of the pains was held up to his death. Having gone to bed in his usual state of health, he was found next morning insensible from an apoplectic seizure; he rallied by the evening of the same day, and conversed with his friends, but coma soon returned. *Post mortem.*—General and very great turgescence was the only morbid appearance found on examining the brain. The aneurism of the innominata pressed against the inferior surface of the sternum so as to render it carious. The left vena innominata was contracted, filled with lymph, and its cavity completely obliterated where it crossed the tumour, which was four inches in diameter by three in length, completely concealing the trachea and gullet. The superior and inferior thyroid veins were enlarged and distended with blood, through them the venous blood from the left arm and left side of the head and neck appeared to be conveyed to the right auricle; though this tumour, situated immediately in front of the trachea and

gullet, had so compressed the sternum as to render it carious, and had obliterated the transverse vein, still, neither dyspnœa nor dysphagia had ever been complained of.

No. 26. Mr. Bayford's *Case*, *Medical Observations and Inquiries for* 1769, page 14.—The symptoms that are briefly mentioned in the report of this case refer to an aneurism of the abdominal aorta, which was found, on the *post mortem* examination, to have ruptured into the cavity of the abdomen, and "at the upper part of the thorax a small aneurismal tumour was formed by a dilatation of the common trunk of the right subclavian and carotid arteries." (This paper is accompanied by an engraving of the morbid appearances.)

No. 27. Dr. Mott's *Case*, *American Journal of Medical Science*, 1830, February.—A man, aged 51, presented a pulsating tumour above the sternum, under the insertion of the right sterno-mastoid muscle, and extending within the chest as low as the second rib; pressure on the tumour almost completely interrupted his respiration; the least exercise had the same effect, and even when at rest his breathing had a wheezing character; he complained of pain when the tumour was pressed; œdema and numbness of the right arm; no pulsations could be felt in the right radial artery, and the right carotid pulsated much feebler than the left; on applying the stethoscope a *bruit de soufflet* was heard over the tumour. The primitive carotid was tied September 20, 1819; the second day after operation, the right radial artery could be distinctly felt pulsating, but it was totally absent in the same vessel twenty-four days after. *Post mortem.*—Aneurism of the innominata engaging the root of the carotid and subclavian arteries; clavicle partly dislocated and absorbed. Death had been caused by the pressure of the sac on the trachea, this tube having been found quite flattened.

No. 28. Dr. Morisson's *Case*, *American Journal of Medical Science*, 1837, February.—A Spaniard, aged 42, had been confined to bed for nine months with pain in the cardiac region; dyspnœa increased by walking; rheumatic pains of the right shoulder, and in the muscles of the neck on the same side. A large pulsating tumour extended from within the chest upwards, and obliquely outwards, behind the sternal attachment of the right sterno-mastoid muscle. The tumour did not diminish perceptibly when pressure was made on the carotid above it, but the pulse at the right wrist became fuller and stronger; when pressure was made on the right subclavian, the tumour pulsated more strongly, as likewise did the temporal and facial arteries of the right side. From these phenomena it was concluded that the aneurism was of the root of the right carotid and innominata. The carotid was tied November 5, 1832. The pulsations of the tumour (which were most violent for seven days after the operation) became weaker, its size diminished, and his health was re-established; he died suddenly twenty months after the operation. *Post mortem.*—Nothing in the chest to account for death; the aneurism was of the innominata and root of the carotid; it had not ruptured:

the arch of the aorta was dilated and had calcareous deposit on it; head and abdomen not examined.

No. 29. M. Genest's *Case, Archives Générales de Médecine*, vol. xxvi. 1831, page 205.—A Portuguese under-officer, aged 44, admitted into the Hôtel Dieu, March 31, 1831. Refers the origin of his illness to a violent effort made with the right side of his body, in an attempt to move a piece of cannon. This occurred two years before his admission; almost immediately after, he found a difficulty in swallowing, and six weeks had scarcely elapsed before the right arm became paralysed. Six months after this violent exertion, a tumour appeared in the space between the trapezius and sterno-mastoid muscles; on admission, a tumour extended from the right clavicle just to the chin, from which a deep furrow separated it; it pulsated synchronously with the pulse, and was as large as an adult's head; his answers were short, and he was obliged to stop suddenly in his conversation if he became excited. A tumour compressed the trachea; respiration was accompanied by a hissing sound and paroxysms of dyspnœa. The right pulse was the weakest, seeming to indicate that the principal vessel of the limb was implicated; a gangrenous eschar formed at the apex of the tumour, and he died from one burst of hemorrhage. *Post mortem.*—An aneurismal tumour of the innominata adhered closely to the first rib, to the right clavicle, to the upper part of the sternum, to the sternal extremity of the left clavicle, and to part of the first rib on the left side. The carotid and subclavian were not in the least dilated; the common carotid was behind the tumour and intact; the subclavian did not appear compressed. The trachea, larynx, and œsophagus all very much compressed from the right side; the wall of the sac was deficient anteriorly; the sterno-mastoid muscle was in contact with the blood of the tumour, and formed its anterior wall.

No. 30. M. Michon's *Case, Gazette des Hôpitaux*, 1847, p. 527.—Patient could give no account of when the disease began; when seen for the first time in February, he could not sit up in bed without danger of suffocation. Above the sternum, and a little to the right of the medial line of the sterno-mastoid, a deep tumour was felt pulsating feebly. Right radial pulse was very small as compared to that in the left arm. Respiration and voice short; now and again, without any perceptible cause, a sudden access of suffocation comes on. In the July following he could sit up in bed, even walk slowly in the ward, and it seemed as if the tumour had in part disappeared, but the larynx was pushed over to the left side. A *bruit de soufflet*, extending into the right carotid, was heard on applying the ear to the chest. Later in the case, respiration could scarcely be heard: skin cold, lips violet, veins of the neck swollen; voice almost inaudible, as if there was some obstacle in the throat; slight cough, but neither hemiplegia, dysphagia, or hemoptysis. Percussion gave a much less clear sound on the right than on the left side, on a level with the sterno-clavicular articulation.

Post mortem.—A tumour, the size of a fist, was developed at the root of the brachio-cephalic trunk (the innominata). The recurrent nerve on the right side, in passing under the tumour, was thereby compressed, and divided into many branches, which were applied closely to the sac. The trachea was pushed to the left side without being sensibly flattened. The bronchi were not in contact with the tumour.

No. 31. M. Breschet's *Case, Mémoires de l'Académie de Médecine de Paris,* vol. iii. p. 129.—Patient, aged 40, admitted to the Hôtel Dieu, May 28, 1829; had been a soldier for ten years, and presented on the right side an aneurismal tumour of the subclavian, extending from the brachio-cephalic trunk to below the clavicle; the right arm was not wasted, still he complained of its being weak, and occasionally swelling. Dupuytren tied the axillary artery; death occurred from repeated hemorrhages.

Post mortem.—The innominata presented an enormous dilatation in all its circumference; the aorta, just to its passage between the pillars of the diaphragm, was considerably enlarged; an aneurismal tumour extended from the division of the innominata to a little above the point where the ligature had been applied.

No. 32. M. Boinet's *Case, Bulletin de la Société Anatomique de Paris, for* 1836, p. 47.—A chandler, aged 57, admitted to the Hôpital Necker, May, 1834. The only position he could remain in for any length of time was sitting up in bed, arms carried forwards, head flexed on the chest; the respiration was difficult, expiration sibilant, and voice feeble. A tumour, pulsating synchronously with the pulse, extends from the superior border of the sixth rib to the thyroid cartilage, and transversely outwards to the middle of the right clavicle, the sternal end of this bone being dislocated; veins on and about the tumour dilated; trachea was compressed and dislocated to the left side, so as to be on a line with the left sterno-clavicular articulation. Right carotid pulsates more feebly than the left; pulses at the wrist equal; pain in the head; he gets violent fits of coughing, during which the face becomes violet-coloured, and he loses consciousness. Percussion gives a clear sound on both sides of the chest, except at the superior part; a *bruit de soufflet* is heard over the tumour; no abnormal sound on the left side of the chest; on the right slight œgophony, as high as the first dorsal vertebra. M. Langier (under whose care this patient was) diagnosed aneurism of the right subclavian, probably extending to the innominata, and on the 12th June, the axillary artery was tied. Hemorrhage began on the 17th; the volume of the tumour diminished a third, and the trachea returned to the mesial line, thus resuming its natural position, while the cutaneous veins became less apparent, the cough becoming less frequent; still the hemorrhage continued; the size of the tumour diminishing daily, until, on the 11th July, it was but half its original bulk; as the size of the tumour diminished, the respiration became more and more difficult, and on the 12th July he died asphyxiated.

Post mortem.—Upper part of sternum, end of clavicle, and the three superior ribs on the right side, were eroded and in part destroyed. The tumour springing from the innominata was as large as a child's head, it compressed the carotid, trachea, bronchi, and œsophagus; the second and third dorsal vertebræ were denuded and in part destroyed; the sac was deficient where the tumour met the vertebræ, the clots being in direct contact with these bones; numerous strong adhesions existed, and prevented all effusion into the pleural cavities. The œsophagus was perforated opposite where the vertebræ were corroded; an opening also existed in the larynx, just below the vocal chords. Half-an-inch below the cricoid cartilage, the trachea was so much compressed as to have become triangular, the apex being posteriorly; the right carotid and subclavian had their origins on the surface of the tumour. The right pulmonary artery and veins were compressed; heart hypertrophied, aortic valves insufficient.

No. 33. M. Mazet's *Case*, *Bulletin de la Société Anatomique de Paris*, 1838, page 49.—A woman, aged 47, admitted to the Hôtel Dieu, May 1, 1838, complaining of dyspnœa and cough with expectoration; mucous and sonorous râles were heard over the chest; heart pulsating with force, but without abnormal sound; the *right* pulse could not be felt even as high as the brachial, and in continuing the search for pulsation higher up, a tumour was found behind the sterno-mastoid muscle, extending behind the sternum into the chest, pulsating synchronously with the pulse, and not painful on pressure. A sound analogous to the first sound of the heart was heard under the right clavicle; no pulsation in the right common carotid; aneurism, probably, of the brachio-cephalic artery was diagnosed; the tumour did not appear to have increased in size since its appearance four years before. She died May 13.

Post mortem.—Softened tubercles in both lungs; a pyriform tumour, four inches long by eight inches in circumference at its largest point, occupied the place of the innominata; the subclavian vein in front of this tumour had been thereby made to form an arch, the concavity looking upwards; the trachea was displaced a little to the left, besides being compressed to the extent of about an inch; the tumour adhered to the first rib and to its sterno-clavicular articulation; the right carotid and subclavian arose from its posterior surface; the right common carotid was impermeable for two and a half inches from the sac; the subclavian was only obstructed at its origin; no dilatation of the aorta.

No. 34. M. L'Hommeau's *Case*, *Bulletin de la Société Anatomique*, 1840, p. 212.—A man, aged 40, complained of intense pain in the right side of his neck and corresponding arm, seven weeks after he had fallen heavily from his horse. Having suffered from dyspnœa during the night, he applied for relief, and on examination, sonorous and sibilant râles were heard all over the chest. The day after his admission there suddenly appeared in the neck a round, pulsating tumour, which caused a painful sensation in the course of the œso-

phagus. On a level with the top of the sternum double pulsation was heard; left arm cold and blue; no pulsation in the left radial or humeral arteries. The state of the right arm and right radial pulse was normal. M. le Docteur Berard diagnosed an old aneurismal dilatation of the transverse aorta, or of one of the trunks originating from it; rupture of the old sac, without hemorrhage, causing the sudden appearance of the tumour, and the state of the left arm caused by a clot in the subclavian artery. Death occurred during a paroxysm of dyspnœa.

Post mortem.—Dilatation of the brachio-cephalic trunk, the left subclavian obliterated by a clot of recent origin. The relations of the tumour rendered an exact explanation of the pain in the course of the œsophagus, of the dyspnœa, and of the sibilant character of the respiration. [This is all that is said regarding the position of the tumour.] The left common carotid arose from the arch by two distinct branches united by a band of areolar tissue and soon forming one trunk.

No. 35. M. Chapelle's *Case*, *Bulletin de la Société Anatomique*, 1848, p. 291.—A carpenter, aged 46 (a drunkard), complained of pain in the right shoulder in July, 1843, followed in November by the appearance of a tumour. When admitted to the Hôpital St. Antoine, under M. Malgaigne, the tumour, as large as a hen's egg, pulsated in all its parts, having its base covered by the sternum and the internal border of the right clavicle. M. Malgaigne intended tying the subclavian and carotid arteries, but only tied the latter vessel, the patient being too much exhausted to justify a second operation, as the carotid, being far to the external border of the sterno-mastoid, had rendered the operation very tedious; tumour diminished very much in size, and he left the hospital much relieved, but against M. Malgaigne's advice. On the 30th July he was admitted to the Hôpital St. Louis, at which time the tumour was larger than before the first operation; a prolonged impulse was heard over the tumour, followed by a period of repose, to which succeeded a *bruit*, clear, short, and replaced immediately by the long impulsive sound; the length of the impulsive sound, and the absence of any pause after the second sound, prevented the movement and *bruit* of the aneurism from being synchronous with the heart sounds. The circulation was re-established at the right side of the head; right pulse smaller than the left; he spoke a little hoarse, had some slight difficulty in swallowing; pain in the right shoulder and arm, at times very intense; slept on the left side, the pain and difficulty of breathing being increased in any other position, and he complained of a pricking sensation in his eyes. M. Malgaigne tied the subclavian on the 13th October, just seven months after the first operation. On the 5th of November dyspnœa re-appeared; on the following day the dyspnœa had increased in intensity, though the tumour was less apparent; he died asphyxiated on the following day.

Post mortem.—The sac occupied the termination of the innominata, engaging the primitive carotid and subclavian. The carotid

was completely obliterated on a level with the superior part of the larnyx; the subclavian was pervious, except where the ligature had been applied. The innominata was an inch and three-quarters in diameter, and the walls of the part that formed the sac were much thickened. The upper part of the sternum, first rib, and clavicle, were eroded from the pressure of the sac.

No. 36. Sir D. Dickson's *Case*, *Revue Médicale*, vol. ii., for 1837, p. 111.—A sailor, aged 40, admitted to the Marine Hospital, Plymouth, in April, 1835, for continual cough, with viscid, sometimes muco-purulent expectoration, and a feeling of constriction, more than pain, at the upper part of the sternum. Pulse irregular, respiration laborious, with mucous and sonorous râles over the chest; he suffered paroxysms of dyspnœa, of an asthmatic character. Chronic bronchitis, with hypertrophy of the heart, was diagnosed; and at a later period there was thought to be a tumour compressing the trachea. He died asphyxiated, June, 1836.

Post mortem.—An aneurism, the size of an orange, engaging the entire of the innominata, had obliterated the left subclavian vein, and the blood could but with difficulty pass through the right subclavian vein, hence the distention of the vessels of the head and neck; the trachea was compressed, and adhered to the tumour; there was also general dilatation of the thoracic aorta. [I have searched in vain for any notice of this case in the English medical journals.]

No. 37. M. Dubrueil's *Case*, *Sur les Anévrysmes de la Portion Ascendante et de la Crosse de l'Aorte*, p. 90.—A man, aged 37, admitted to the Hôpital St. Eloi de Montpellier, the symptoms being, pain, intense and continued in the upper part of the chest, low down in the neck and in the right shoulder; respiration sibilant; frequent cough; voice weak and cavernous; right pulse scarcely to be felt; right humeral artery pulsating very feebly. A pulsating tumour existed above the right sterno-clavicular articulation, and extended across the neck to the sternal attachment of the left sterno-mastoid; a second tumour rose above that just described, as high as the fifth cervical vertebra; a *bruit de râpe* was heard over it; while an obscure *bruit de soufflet* was heard over the chest, there being no difficulty in distinguishing the pulsations of the tumour from those of the heart. Aneurism of the arch of the aorta and innominata was diagnosed. The tumour, as it increased in size, dislocated the clavicle, pushed the sternum forwards, rendered the dyspnœa more and more intense; blood was discharged by the mouth, and he died soon after.

Post mortem.—Remarkable flattening of the tumours; an aneurism arose from the superior and posterior of the transverse part of the arch, inclining to the right, resting on the trachea, into which it had burst. The innominata was dilated to double its normal size, its caliber was almost entirely obstructed by a mass of solid fibrine of a very ancient date, which scarcely allowed any blood to pass through it.

No. 38. M. Dubrueil's *Case*, *Sur les Anévrysmes de la Portion Ascendante et de la Crosse de l'Aorte*, p. 122.—A captain of artillery, aged

44, was attacked with pain in the upper part of the chest, for which he took warm baths; hemoptysis appeared, and continued at intervals; attacks of dyspnœa became so urgent as to oblige him to enter the Hospital at Montpellier on the 6th August, 1836; bleeding relieved the intense dyspnœa but little, and he died suffocated; lesion of the vessels not being suspected, though the lungs were frequently examined.

Post mortem.—Interlobular emphysema: an aneurism of the brachio-cephalic trunk was found, as large as a turkey's egg, having perforated the trachea at three points; some spiculi of phosphate of lime had passed from the walls of the sac into the trachea, and raising the mucous membrane about two inches from the origin of the bronchi, appeared (when seen from the trachea), as raised reddish tumours under the mucous membrane.

[This case was reported to M. Dubrueil.]

No. 39. M. Dubrueil's *Case, Sur les Anévrysmes de la Portion Ascendante et de la Crosse de l'Aorte*, p. 129,—A man in the prime of life was seized suddenly with severe dyspnœa and violent convulsive cough, which he attributed to having a few moments before made a violent effort in raising a bag of corn; the dyspnœa continued, and he was obliged to leave his work. Six months after, a tumour, the size of a nut, was seen pulsating at the inner third of the right clavicle. The tumour had acquired an immense size, pressing outwards the lower half of the neck, and extending downwards into the chest, as low as the third rib; it passed transversely across the chest from the internal third of the right clavicle to the sternal insertion of the left sterno-mastoid; over the part of the tumour that was within the chest a *bruit de soufflet* was heard, so loud as to strike the ear, while over the portion that was external to the chest and above the clavicle a purring murmur existed, such as is heard in external aneurism. His respiration was loud and wheezing, voice raucous, the patient even aphonic at times; right arm infiltrated with serous effusion; right side of the face wasted; deglutition always painful and sometimes impossible; left pulse natural at 56; right thread-like. Pulsation can scarcely be felt in the right common carotid, and was absent in the temporal of that side; the fits of coughing, without expectoration, became more frequent and violent; the sac burst externally, and death was instantaneous. Aneurism of the innominata, connected with, and dependent upon aneurism of the transverse portion of the arch, had been diagnosed, but at the *post mortem* the arch was found *perfectly* healthy, though the entire of the innominata was engaged in the aneurism; rupture had occurred at the highest point; a coagulum rendered the right common carotid completely impermeable; the subclavian was also considerably diminished in size; not far from the cricoid cartilage the tumour rested on the trachea, thereby causing flattening and thinning of four of its rings.

No. 40. M. Planque's *Case, Bibliothèque Choisie de Médecine*, 1759, vol. x. p. 276.—A soldier, aged 46, admitted to the Infirmary

of the Hôtel des Invalides, complaining of cough, with bloody expectoration and pain in the throat, these symptoms having existed for the past six weeks. A tumour was found at the anterior and inferior part of the neck, immediately above the sternum, pulsating regularly, and capable of being emptied, but immediately refilling on removing the pressure; he only noticed it since he was attacked with a cold six weeks ago; he discharged blood by the mouth on the third day after admission, and died.

Post mortem.—A pouch, one inch in diameter by two in length, was given off from the innominata, at its middle having the form of the tumour that appeared in the neck; hence, says the author, "the aneurism was not of the aorta, as I had considered it to be."

No. 41. M. Piorry's *Case, Traité de Médecine Pratique*, vol. i. p. 299.—"In a patient whose right subclavian space was occupied by an aneurismal tumour, examination after death showed it to have been caused by an aneurism of the innominata, and that the sac was of the dimensions indicated by percussion made before death."

At page 390, vol. x. of the *Journal de Médicine* par M. Sédillot, there is an account of an aneurism of the aorta that extended to the innominata. There is also reported, at page 306, vol. xi., *Recueil des Memoires de Médecine, de Chirurgie, et de Pharmacie Militaires*, a case of extreme dilatation of the aorta, innominata, carotid, and subclavian arteries; but sufficient details are not given to secure for these cases even a pathological interest.

No. 42.—In the *Bolletino delle Scienze Mediche*, and in the *Journal des Connnaissances Médico-Chirurgicales*, vol. ii., for 1844, page 78, it is mentioned, that M. Rossi tied the right subclavian and primitive carotid, and that *post mortem* examination showed the innominata to be the seat of an aneurism; the left carotid and right vertebral arteries were found obliterated; hence, for the six days that he lived, after the subclavian and carotid had been tied, the left vertebral was the only artery through which blood could pass to the brain.

No. 43. *Repertorium der gesammten deutschen Medizinisch-Chirurgisch Journalistik*, by Neumeister, for 1830, p. 119.—A man, aged 51, of good constitution, was sent to the hospital, for the disease above mentioned (aneurism of the innominata). The tumour was too extensive (beating with great violence) to admit of a ligature being applied, after Hunter's method, between the sac and the heart; Brasdor and Wardrop's operation being the only one applicable to this case, the carotid artery was tied; an hour after he complained of intense headach, and the tumour pulsated as violently as before. On the following day, June 14, the pulsations were not so strong, and the pain in the right shoulder and arm was much less. June 16th, partial loss of vision in the right eye, pain in the right ear, mind began to wander, paralysis of the left side of the body appeared, which increased on the next day, and death followed on the 18th.

Post mortem.—An aneurism of the innominata, the size of a man's

fist, was found, which had rendered the right clavicle carious; the carotid was obstructed by a firm coagulum, for the extent of an inch and a half below where the ligature had been applied.

No. 44. Dr. Hampeis' *Case, Medecinische Jahrbücher des Kaiserlicho Königlichen Oesterreichischen Staats*, January, 1845, p. 19.—A man, aged 62, observed a swelling rising between the second and third ribs, on the right side; it was not painful, and disappeared on pressure; it increased rapidly, and on his admission to hospital was five inches in diameter, by two in height; it spread over the sternum; the veins on the right side of the chest were varicose; feeling of cold extending down the right arm; burning pain in the throat; cough, with bloody expectoration; the entire mass pulsated strongly; heart's action irregular; he suffered from occasional fainting fits and difficulty in swallowing; the tumour was daily expected to burst externally; he died on the 22nd April.

Post mortem.—An enormous aneurism of the innominata was found, having by its pressure caused absorption of the upper part of the sternum at the right side; the superior ribs on the same side were in part absorbed.

No. 45. Professor de Renzi's *Case, Annali Universali di Medicina Omodei*, 1836, vol. lxxviii.—A carrier, aged 46, admitted to the Hospital for Incurables; addicted to the use of spirituous liquors; and had suffered from syphilitic bubo. In September, 1832, he was attacked with pain in the right clavicular region, an irritating cough, and loss of sensibility of the right arm; respiration became difficult, and the cough took on a convulsive character. Later in the case, he is reported to have complained of a vague pain in the throat, slight aphonia, difficulty in swallowing, and impossibility of lying on the back; left radial pulse beat very quick, while no pulsation could be felt in the right radial, brachial, or carotid arteries. As the disease progressed, pain extended to the left side and shoulder, followed by numbness of the corresponding arm; mucus accumulated in the trachea, which was expelled with so much difficulty as at times to threaten suffocation. The rhythm of the heart was not quite natural; the entire chest sounded dull on percussion; pectoriloquism was heard over the inferior part of the right lung, anteriorly; sibilant respiration in the lower part of the left, together with other phenomena, that led to the diagnosis of tubercular disease, with the formation of a cavity, and an affection of the heart. The absence of pulsation in the right radial, brachial, and carotid arteries led to the suspicion of disease in the great vessels; but it could not be stated positively, for want of the necessary signs.

Post mortem.—The lungs were full of miliary tubercles, and presented a cavity in the inferior lobe of the right lung. The aortic valves were a little thickened and indurated. An aneurismal tumour, the size of a small orange, arose from the innominata, and in part from the aorta; it was filled by a mass of very adherent fibrine, extending into the carotid. The sac lay to the right side of the trachea, and an inch above the division of the bronchi.

It is unnecessary to lengthen further this part of the subject by giving an account of the preparations of innominata aneurisms in British and Foreign museums; for, as the phenomena they produced during life are not recorded, their value is purely pathological. I must, therefore, refer those who take an interest in these inquiries to the catalogues of the museums, whose arrangements are so perfect as to remove all difficulties in the search; with this exception, the above will be, I trust, considered as forming a pretty complete history of this affection. I shall next proceed to consider the differential diagnosis of these aneurisms.

(*To be continued.*)

Art. VIII.—*On the Treatment of Fractures in the Vicinity of the Ankle Joint; with Observations on the Practice of Tenotomy, as facilitating Reduction of the broken Bones.* By Richard G. H. Butcher, F. R. C. S. I., Examiner on Anatomy and Physiology in the Royal College of Surgeons of Ireland, Surgeon to Mercer's Hospital, &c. &c.

The writer of the able article, "Particular Fractures," in the Cyclopædia of Practical Surgery, edited by Costello, at page 390 thus expresses himself: "A frequent and serious set of accidents consists of different fractures of the two malleoli, or of the inner malleolus and of the fibula, close above the ankle joint. The tibia being sometimes luxated, and the mischief being complicated with laceration of the integuments, presents us with very formidable conditions, the whole train of whose consequences demands all the powers of surgery."

Being fully impressed with the truthfulness of this statement, I am induced to place on record the following cases, treated by a simple and most efficient method, preserving to the sufferer in every instance the integrity of the limb and its normal functions. From the great opportunities afforded in the hospital to which I am attached of observing every variety of

fracture (some hundreds being admitted yearly), I have selected the complicated class which forms the heading of this paper; I am also desirous of doing so because they have occurred within so short a period, and were subjected daily to the observation of a large class of students. I propose first to record the cases and their treatment, and then to make such observations as I think the subject demands, in reference to the operation of tenotomy for facilitating the reduction of the broken bones.

Case I.—In the Dublin Medical Press for April, 1851, I have given in detail the outline of a remarkable case of fracture of the internal and external malleolus, with dislocation of the tibia forwards, or, according to Dupuytren, of the foot backwards, occurring in a large, muscular man, and treated on a particular plan, with the most favourable results; the normal functions of the joint being entirely preserved, the patient capable of walking long distances and prosecuting his ordinary business without the slightest interruption or impediment. In the case alluded to, the appearance of the limb, as it lay on the pillow, was very characteristic of the injury the patient sustained. The most striking features were, the fore-shortening of the foot, the lengthened heel, and the consequently increased arch of the tendo Achillis; at the same time the foot was abducted, or, in other words, its internal edge lay considerably lower than the external; there was a most marked depression about two inches above the tip of the external malleolus, and a remarkable prominence an inch above the lower margin of the internal malleolus. So sharp was this upper fragment that it threatened every moment to protrude through the strained and tightened integuments. Effusion had not as yet set in, owing to the collapse consequent upon a debauch and the reception of so severe an injury. Nothing then obscured the great deformity and the bold outlines which characterized the accident, as fracture of the fibula and of the internal malleolus, and dislocation of the tibia forwards.

On elevating the limb from the bed, the leg being bent on the thigh, the following solutions accounted for the deformity. The fibula was shattered two inches and a half from its lower edge, the pieces being very numerous and moveable; the internal malleolus was broken at its base, and as a sequence to the lateral support of the joint being lost, and, probably in some measure to the force being continued, the tibia readily glided over the convex surface of the astragalus, while the foot, and the lower fragments, the internal and external malleoli, drooped backwards; not only was the tibia considerably advanced, but its inner margin was abnormally in front of the outer edge, or, more briefly, it was slightly rotated outwards. The articulating extremity of the tibia greatly overhung the navicular bone, yet, strictly speaking, its anterior edge did not rest upon it, for the foot was pointed downwards by the action of the powerful extensor muscles acting on the heel. Thus the perfect dislocation of the tibia off the astragalus, as clearly indicated by manipulation, will account for the great fore-shortening of the foot, which fully amounted to an inch and a half. While an assistant flexed the leg upon the thigh, I was able without much difficulty, by traction on the foot, to lift it forward, together with the broken malleoli, into position, and then, by slightly inverting the foot, the lower fragment of the internal malleolus was brought up in apposition with its base, and the integuments, from being tense almost to bursting, were at once relaxed over the lower edge of the superior fragment; on removing the support for an instant, the extensor muscles, thrown into spasms, at once reproduced the deformity that stamped the accident. By a repetition of the above manœuvre co-aptation of the broken fragments was effected, and the limb placed in a fracture-box, the thigh slightly bent and the leg resting on the heel. The box was so constructed that it retained it in this position, for, while the thigh was supported on a gently inclined plane, the leg rested on a horizontal surface; the box was well padded, particularly beneath the heel;

splints, with lateral foot-supports, were slid up between the cushions and the sides of the box; each had a round hole bored in its lower extremity, which received the arms of the sole-piece; in addition to the lining pads of the splints for guarding against undue pressure, there were three used with the object of acting on the broken fragments and displaced parts: the first placed beneath the heel so as to press the foot and lower fragments well forwards; the second, somewhat in the form of a wedge, was placed along the inner side of the leg, the base of it resting about two inches above the fracture through the tibia; this tended to press the tibia outwards, while the third pad also triangular, was placed between the outer side of the foot, and the corresponding splint, the base at the toes; this inverted the foot, and most effectually acted in bringing up the internal malleolus to the upper fragment. The splints and pads being adjusted in this way, the anterior surface of the limb was raised exactly to a height with the sides of the fracture-box, so that, when the first roller was applied from below the knee around the fracture-box and leg, as far as the centre of its lower third, an equable pressure was maintained all along the anterior surface of the tibia, and by this means acted most efficiently in steadying the upper fragments, at the same time pressing them backwards; several layers of soft wadding were interposed to prevent any fretting of the integuments over the sharp spine of the tibia. The foot, as before mentioned, was kept well pressed forward by the increased number of pads under the heel, and fixed, *slightly* inverted, by a few turns of a roller, embracing the anterior part of the dorsum of the foot, side-splints, and foot-board. By this arrangement the limb lay in admirable position, all deformity entirely removed, with the parts corresponding to the site of fracture and ankle-joint freely exposed for local applications.

On the limb being done up in this way, the patient expressed himself as being relieved from all pain; a cold lotion was ordered to be kept to the part, and a full opiate was pre-

scribed. On the following morning great swelling and effusion were present, the collapse having passed away, and re-action set in. I was at once careful to ascertain that no undue pressure was exerted by the mechanical means employed, but nothing could be more satisfactory than their adjustment. His bowels were freed by medicine: relays of leeches were directed to be applied, six at once, and the part to be afterwards enveloped in a warm stupe, so as to solicit a constant drain of blood; four more in three hours; and warm stupes to be continued all night. Though the local abstraction of blood was here imperatively demanded, taking into consideration the intemperate habits of the man, I did not think it prudent to stop altogether his usual stimulants, particularly after the infliction of so severe an injury. On the fourth day the nervous system began to give evidence of participating acutely in the local affection; he had scarcely any sleep, and that obtained was not perfect or refreshing, as he was awoke at short intervals by a tendency to spasms in the voluntary muscles of the upper as well as the lower extremities; pulse very irritable and rapid; respirations unequal; tongue tremulous, and covered with a whitish pasty coating. The limb lay in admirable position, sufficient restraint being employed to prevent deformity and guard against displacement, so as at the same time not to obstruct the free circulation in the overloaded vessels. He was now put under the influence of opium, and kept so. On the sixth day from the receipt of the injury he was better in every respect; he slept all night; his pulse quiet; no spasmodic startings; tremulous motion of the tongue subsided; and the limb free from pain, and in good position. On the twenty-second day after the accident I applied Dupuytren's splint and wedge-shaped pad along the back of the leg. This acted exactly on the same principle as the treatment adopted from the very first, after the receipt of the accident. The base of the pad resting on the splint behind forced the foot forwards, whilst the little pad, placed in front of the lower end of the tibia, and retained by a

bandage, propelled backwards the articulating surface of the tibia. With the splint thus applied, after Dupuytren's directions, the limb was placed in the fracture-box, with side-splints as before, by which the foot was slightly inverted. On the 18th of April the union was quite firm; I therefore removed Dupuytren's apparatus; there was not the least fore-shortening of the foot, or displacement of any kind. I then put on a roller, side-splints, and foot-boards, as offering sufficient restraint; and on the 20th of the month he quitted the hospital, with the motions of the joint nearly perfect, and not the least trace of deformity.

This case, when admitted to the hospital, was looked upon as one of the most grave character; in the first place from the violence and injury inflicted on the part; and secondly, in having occurred in a broken-down constitution, and an habitual spirit-drinker: such a combination justified a guarded prognosis at least. In the management of it, I urged the advantages accruing from at once placing the limb in that position which it is to hold all through the treatment, and retaining it so. This axiom was well carried out in the case alluded to, and the advantages resulting from early co-aptation very apparent; the broken fragments no longer irritated the soft parts, and pain, a very constant inciter to spasm, was greatly averted; the mechanical means adopted in this instance answered every purpose, and I consider the apparatus far the best for the displacement under consideration. It is, as I have mentioned, of great value that the thigh should be slightly flexed on the pelvis; this relaxes to a sufficient degree the great extensor muscles of the leg; more particularly so if immediate reduction of the parts be had recourse to; again, in this box, the leg rests on a horizontal surface, receiving an equable support on all sides, padded so as to force the heel forwards; and by a few turns of a bandage, the upper fragments are restrained and pressed backwards; the two forces, thus acting in contrary directions, tend to confine the articulating surfaces in their natu-

ral relationship to each other; the side-splints superadded, with the triangular pad, not only steady the foot, but tend to invert it, so as to bring up the inner malleolus to the point from which it may be broken off. In this case the constitution very early exhibited indications of sympathizing acutely with the local affection. The wanderings of the patient's mind, the tremulous tongue, the slight startings in the limb, and, above all, the frequent, short spasms arising in most of the voluntary muscles, formed such a combination as to awaken great anxiety as to the result. This train of symptoms was met by the full exhibition of opium, in other words, placing the patient under its influence, and a due supply of his accustomed stimulant. While I admit the great power that the opium exerted over this train of alarming symptoms, I cannot but feel sensible that the admirable position which the limb maintained from the very first, tended materially to ward off their perfect development, and to consummate the happy result.

The foregoing case offers, I conceive, a good illustration of what may be effected by early co-aptation, and position, in the treatment of one of the most troublesome forms of fracture which the surgeon can be called upon to manage.

Case II.—*Fracture of the Tibia an inch above the Ankle-Joint, with that of the Fibula half-an-inch higher up.*

Patrick Grace, aged twenty-two years, a powerfully made, muscular man, was admitted into Mercer's Hospital, under my care, October 8, 1851. He had been wrestling, and received two very severe kicks on the left leg from his antagonist, who wore strongly nailed shoes. On admission, the deformity of the limb was very great, and characteristically striking of the lesion that had taken place. The foot drooped backwards, the heel was lengthened, and drawn up by the extensor muscles, which were in rigid contraction; at the same time there was an angle salient in front, formed above the articulation. This combination, then, rendered the displacement remarkable. On

making extension at the foot, the leg being flexed on the thigh and held so by an assistant, the powerful action of the gastrocnemius was overcome, and a facility afforded of examining the nature of the fracture. By the force employed the foot could be brought up to its normal situation, which had the effect of entirely removing the deformity in front; and then by the slightest motion crepitus was elicited very audibly, and the tibia found to be fractured tranversely an inch above the ankle-joint, and the fibula half-an-inch higher up. The integument over the part was much discoloured from contusion. I at once placed the limb in a fracture-box, such as already described, the thigh semi-flexed, and the leg resting on a horizontal plane, while the foot, together with the lower fragments, was kept well pressed forward by pads beneath the heel. Side-splints were then slid up within the box, to which the sole-piece was connected, thus maintaining the foot at a right angle with the leg; two bandages were then applied, as in the former case, and the region above the joint, the site of fracture, left uncovered for local applications; a full, warm opiate was administered, and all tendency to spasm of the calf in a short time subsided.

11th. He has had no pain or starting since the limb was put up; ordered cold to be applied to the injured part, and a full opiate to be given twice in the day.

14th. Up to this date the limb did not require to be disturbed; nothing could be more accurate than the co-aptation; scarcely any swelling about the part. On this day I applied Dupuytren's splint and cushion to the back of the leg, which effected equally well the apposition of the broken fragments; done up in this way the limb was placed in the fracture-box, with side-splints and foot-board as before.

16th. No displacement of the fracture; cold to be continued, and the opiates night and morning.

21st. I re-applied Dupuytren's splint, fracture-box, &c.;

the parts are in excellent position, and very little thickening about the fracture.

30th. I re-adjusted splints, &c., as before.

November 6th. Union progressing rapidly, so much so that on November 20th I removed the splints altogether; the union was quite firm, and I applied a roller to the limb.

26th. There is scarcely any thickening around the site of the fracture, not the slightest displacement or deformity whatever; and flexion and extension at the ankle-joint are permitted to nearly their normal extent.

30th. Dismissed, with all the motions of the joint healthy.

Case III.—*Fracture of the Tibia and Fibula two inches above the Ankle.*

Michael Enright, aged 40, a large, muscular man, was admitted into Mercer's Hospital, under my care, October 9th, 1851. He was thrown from an outside jaunting-car, which was travelling very rapidly; he was tipsy at the time, and could not give any account of the accident. He was brought to hospital in six hours afterwards, and on examination, the right leg was found to be broken, the tibia having yielded two inches above its articulating surface, and the fibula a little higher up, about a quarter of an inch; the heel was drawn back and forcibly upwards, by the rigid contraction of the extensors, and the line of the tibia in front altered to a curve. Even at this early period, six hours after the receipt of injury, rapid effusion, chiefly of serum, had set in, producing great swelling and tension. By gentle and continued traction on the foot, the leg being flexed and steadied by an assistant, I wearied out the rigid spasm of the muscles effecting the displacement, and having restored the broken fragments to their natural position, they were retained in contact by the mechanical contrivances used in the preceding cases; cold was applied to the affected part, and a full opiate administered.

10th. The patient has not suffered from spasm or pain since the limb was put up on yesterday; effusion still very great; to continue the cold, and a full opiate twice a day.

12th. Œdema so much augmented, I considered it advisable to apply a wetted roller, moderately tight, from the toes to the knee, and on lifting the limb from the fracture-box there was a good illustration of the rapidity with which the distortion might be produced by the spasmodic action of the extensors, when not fairly and thoroughly controlled by efficient mechanical means. The parts were, however, again restored to a suitable posture, and retained by Dupuytren's splint, applied to the back of the limb; placed in the fracture-box, &c., and steadied as before. By this arrangement no deformity whatever was apparent, and the patient experienced the greatest comfort.

19th. I replaced the wetted roller at intervals of three and four days since last report, and with the best results, both as to the diminution of the swelling and the relief of the patient's feelings, "the bursting distention" which he grievously complained of being replaced by a soothing sensation, from the diminished temperature, and equable support afforded to the limb.

22nd. The leg had obtained its natural dimensions; all effused fluid being nearly absorbed, I now placed Dupuytren's splint along the calf of the leg, with its folded cushion and small pad, and by these means perpetuated the force, as brought to bear on the broken fragments from the very first; with these surgical appliances the limb was steadied in the fracture-box, as in the former cases.

November 1st. The limb is in perfect position, free from all swelling, and so immoveably kept, by the means adopted, that the patient solicited permission to be removed to his own home, a proposition to which I acceded, being certain that no displacement could occur.

November 6th. There is very little swelling about the fracture; soft union far advanced; I put up the limb as before.

December 8th. Since last report up to the present, the same line of treatment has been followed, and the case has gone on rapidly to cure; there is firm union, and the patient is able to walk about with the assistance of a stick; the motions of the ankle-joint are perfect, and there is not the least appearance of deformity.

Case IV.—*Transverse Fracture of the Tibia an inch above the Ankle-Joint, with a Vertical Splitting of the lower Fragment into the Joint, and Comminuted Fracture of the Fibula extending higher up.*

Edward Dowds, aged twenty-eight years, a large, athletic man, by trade a gas-fitter, was admitted into hospital, under my care, October 14th, 1851. The history of the case is as follows:—He was working on the edge of a gasometer, at the height of five-and-twenty feet from the ground, when a part upon which he stood gave way; he felt it yielding, and to try and save himself, he leaped off, and came down upon his feet on a flagged pathway, from the shock of which he instantly fell to the ground, and was quite cognisant of the leg being broken; he both heard the crack and felt the most acute pain. Almost at the same instant he was assisted up, and brought immediately to hospital. The deformity of the leg was very great, the fibula being broken in pieces, from about an inch above the extremity of the malleolus for at least two inches; one piece in particular, a large one, was forced away from between the upper and lower fragments of the bone, and thrust under the skin on the anterior aspect of the leg and a little above the joint, thus leaving a great depression corresponding to the gap in the continuity of the lower part of the shaft of the bone. The tibia was broken transversely about an inch above the base of the internal malleolus, and this lower frag-

ment was split vertically from the articulation to the transverse fracture, the outer bit remaining attached to the external malleolus. The foot and lower fragments were drooping backwards, the toes pointed downwards, and the heel forcibly drawn upwards by the extensor muscles in rigid contraction; the transverse width of the joint was increased three-quarters of an inch. Such a combination exhibited the greatest amount of deformity I have ever witnessed, as the result of complicated fracture in the neighbourhood of the ankle-joint. All the solutions of continuity referred to, and the exact condition of the parts could be most accurately investigated, from the fact of scarcely any effusion or tension having set in when submitted to my examination. I at once set about restoring the parts to as accurate a position as was attainable. An assistant having raised the limb, and steadily supported it, I embraced the heel and dorsum of the foot between both my hands, and having made forcible and continued extension for at least a quarter of an hour, wearied out the contracted action of the extensor muscles, and was then able to bring up the foot and lower fragments on a line with the upper, and do away in a great measure with the deformity. On taking hold of the internal and external malleoli, one in either hand, they could be moved freely in contrary directions, and the vertical splitting causing the increased width of the joint, demonstrated through its entire extent. Having effected so much, the limb was placed in the fracture-box, with the heel well padded and raised; side-splints, cushions, and bandages being applied, as in the former cases; no power or motions whatever could get back into position the detached piece of the fibula above the joint. After the adjustment of the fracture the patient was relieved from all pain and uneasiness. From the mode in which the splints, bandages, &c., were put on, it follows that the injured part was left exposed for the application of local measures; linen steeped in cold lotion was ordered to the part, and a large opiate given.

21st. He has had no startings of the limb since it was put up on yesterday; but it is now hard and tense from effusion; exalted in temperature and painful: relays of leeches, six at a time, were ordered, so as to keep up a continuous drain, which was encouraged by warm stupes.

22nd. Limb a great deal more swollen, tense, shining, and painful, and, as the result, bullæ have formed over the site of the fracture in the fibula; leeches were ordered as on yesterday; warm stupes to be continued; and a full opiate to be administered twice in the day.

23rd. Swelling less, but still great tension; leeches again to be applied, and the opium continued.

26th. The discoloration of the limb is very remarkable; turgid, and all over of a yellow hue, resulting from the contusion; the bullæ are tense, firm, and do not recede on pressure; there is no constitutional disturbance.

28th. Re-adjusted the splints, pads, &c., with much comfort to the patient; cold to the affected part was ordered.

November 6th. Swelling and pain all gone; the bones are lying in excellent position, with the exception of the detached piece projecting above the joint; but this is not producing either ulceration or sloughing of the skin, as might have been anticipated; I placed the limb in the fracture-box, supported as before with splints, cushions, and foot-board.

December 10th. Firm union of the broken bones, and the amount of callus thrown out is very small, so that even the flexion and extension of the joint is not interfered with.

23rd. The parts are perfectly solid, and though some little tendency to eversion from the gap in the fibula being filled by a structure not entirely consolidated, yet the issue of the case has been most satisfactory; the motions of the joints are preserved in their fullest integrity, and it only remains for the perfect completion of the cure, that the patient should continue a little longer in hospital.

Case V.—*Fracture of the Tibia and Fibula, an inch and a half above the Ankle-Joint.*

This case was admitted into hospital under the care of my colleague, Mr. Tagert, senior surgeon to the hospital.

Catherine Maclean, a large, full woman, aged 40, was received into the house, November 8th, 1851. She was going down stairs when she slipped and fell to the bottom of the flight, and her right foot was twisted violently under her; it was evident to her friends that the leg was broken, and she was instantly removed to hospital. On examination the tibia and fibula were discovered to be broken, an inch and a half above the ankle-joint. The deformity in this case was somewhat similar to that in the case No. III. The action of the gastrocnemius was marked, and the heel drawn backwards and upwards, an angle being formed salient forwards. By extension and counter-extension the opposing resistance was overcome, and co-aptation of the broken fragments ensued; the limb was then placed in a padded fracture-box, the heel being well supported and pressed forwards; cushions, side-splints, foot-board, and bandages were then put on, as in the former cases, and with a similar object.

November 9th. No startings, or pain, and the limb lies in excellent position.

13th. Dupuytren's splint was applied along the calf of the leg, with the object already explained.

December 20th. Up to this date nothing can be more satisfactory than the progress of the case. Dupuytren's splint has, at intervals of five and six days, been re-adjusted, and the result has been perfect exemption from displacement, and, by the steadiness of the posture, maintained the perfection of the union by callus. In a few days the patient will be able to leave the hospital, with the motions of the joint but little interfered with.

Case VI.—*Compound comminuted Fracture of the Tibia, two inches above the Ankle-Joint, and Fracture of the Fibula a little lower down.*

Mary Irwin, aged thirty-eight years, was admitted into Mercer's Hospital on 18th November, 1851. The history of the case is, that she was tipsy and staggering from one side of the footpath to the other when she slipped off of the curb-stone, her foot still remained on its sharp edge, and she fell violently to the ground, crushing, as it were, the leg under her. In a few minutes she was brought to the hospital, the accident having occurred close to its doors. On the patient being stripped and put to bed the deformity was found, on inspection, to be very similar in its outline to that of the foregoing cases, with the very serious complication of the protrusion of the point of the upper fragment of the tibia, which was very sharp, through the integuments, two inches above the ankle; from the wound, about an inch in extent, blood was flowing very freely. In addition to this fracture the internal malleolus was broken in pieces, and the fibula, a little below the wound, on the anterior aspect of the limb. From the fracture of both bones nearly in the same line, the foot and lower fragments were permitted to be dragged backwards and upwards by the rigid spasmodic contraction of the extensor muscles, while the comminuted condition of the internal malleolus, the pieces of which were nearly driven through the skin, allowed the foot to be greatly everted, its inner edge being considerably the lowest part: thus the case was marked by frightful deformity. At the time when this woman was admitted to hospital Mr. Tagert and myself were in the accident ward, and, owing to the very recent occurrence of the injury, the most accurate conclusions as to its nature were arrived at.

The case was placed under Mr. Tagert's care, and he readily acquiesced in my proposal of treating it on the principles inculcated in the former cases. By steady traction and counter-

extension, the leg slightly flexed on the thigh, the protruding bone was reduced, the spastic action of the gastrocnemius overcome, and the foot and lower fragments raised forwards, and brought in a direct line with the shafts of the bones, and retained so by the mechanical means alluded to in each of the cases already detailed; the fracture-box, the side-splints, the pads and foot-board, the two bandages, each when adjusted rendered the contrivance perfect and most efficient in preventing motion or disturbance of the injured parts; and, in addition, the paramount advantage was obtained of having the site of the fracture uncovered—the wound thus exposed to observation and for local management, avoiding the necessity for that most reprehensible of all practices, the removal of the mechanical support. In this case, after the fracture was reduced and the limb restored to position, the bleeding ceased; but, from the patient being a full, plethoric subject, it was considered advisable to solicit its flow, which was reproduced in a small stream by the application of a warm stupe; after some time the drain ceased altogether, when a small compress of lint was placed over the wound and the warm stupes continued. Ordered an opiate immediately.

19th. She has had no startings in the limb; slept composedly; stupes to be continued.

26th. Limb lying in the same position as when first put up; some swelling has set in during the last four days, but its absorption is taking place rapidly under the application of cold; the wound is granulating healthily.

30th. A considerable amount of fibrine is thrown out about the fractured bones; they are softly connected, and in perfect position; the wound steadily healing.

December 16th. Wound healed, and union progressing rapidly. In this trying case the mechanical contrivance had only to be re-adjusted four times, so perfect was the support afforded to the parts, and so complete the exemption from spasm. She

continued daily to improve up to the 19th, when the patient requested permission to be removed to her own house.

One of my chief reasons for wishing to place these cases on record is the practice lately brought into requisition in London, in the management of the special fractures under consideration. I allude to *tenotomy*, the division of the extensor tendons, to facilitate reduction, as practised by Meynier, Bérard, Laugier, and other French and German surgeons. A lengthened discussion not long since took place before the "Medico-Chirurgical Society of London, on the practice of tenotomy, in some cases of fracture, when Mr. C. De Morgan related some cases in illustration"[a]. In the first cited, the tendon was not divided until the day after the accident. "The second case occurred in the author's own practice; the patient was a female aged 66; of drunken habits, and was admitted into the Middlesex Hospital in March, 1849. She had been knocked down by a cab, and both bones of one leg were fractured a little above the ankle." The report goes on to say:—"The author divided the tendo Achillis on the ninth day, with instant relief to the suffering of the patient, and immediate removal of all untoward symptoms." A very important feature in the management of these cases has been omitted altogether: the manipulation adopted for the reduction of the fracture, and the position in which the limb was placed afterwards. In the second case it is stated that "the tendon was divided on the ninth day." I can easily understand that this might be requisite, if the fracture, with its attendant deformity, was left unreduced for that length of time; failure of the therapeutic means employed; and the spasmodic action of the extensor muscles thus prolonged; for if fractured bones be left unreduced for such a lengthened period as this, *permanent* spasm seizes on the mus-

[a] I quote from Braithwaite's Retrospect; but a notice of them also appeared in the Number of this Journal for May, 1851, page 372.

cles and becomes established; a fact clearly pointed out and insisted on by Sir A. Cooper. Mr. De Morgan goes on to say: "In the cases related, the chasm between the divided portions at first did *not* exceed a quarter of an inch, that being sufficient to get the bone into position; and in a short time after there was no appreciable space at all." This admission goes still further to proclaim that there is no necessity for division of the tendon to effect reduction, if the case is seen early; for by flexing the thigh as I have recommended, we can relax the extensor muscles more than "the quarter of an inch, that being sufficient to get the bone into position." I am of opinion that in ninety-nine cases out of a hundred, there will be no necessity for division of the tendon to effect reduction, if the limb be treated as I have advised; nay, on the contrary, I think, in some instances, the division of the tendon would be very injurious, as removing the support posteriorly from the ends of the broken bones, and thus permitting displacement in that direction. The mode in which the fracture-box, which I have described, supports the leg in a horizontal line, with the thigh slightly flexed, padded, and cushioned, as illustrated by the foregoing cases, meets every requirement of the surgeon. Dupuytren's splint, in conjunction with these means, as used in some of my cases, is a most admirable adjunct; but taken by itself, it will not answer as well for the management of the form of fracture under consideration; for if the limb be done up as directed by Dupuytren, and placed flexed upon its side, some lateral displacement will take place; or if, with the splint so applied, the leg be allowed to rest upon the heel, it is unsteady and rolls about, and the entire limb is in the extended position, a posture very objectionable, as making tense the tendo Achillis.

From a review of these cases and the observations upon them, the following facts are, I think, deducible:—

First, That by proper position of the limb, and early re-

duction, co-aptation of the broken fragments can be effected, and spasm averted.

Secondly, As the result of the broken bones being kept in accurate position, irritation is subdued, excess of callus prevented, and the motions of the joint left unimpaired; a fact of great practical importance here, for the experiments of M. Cruveilhier prove that various forms of irritation will make the periosteum and ligaments ossify, and it has been ascertained that in some cases of fracture near the joints the ligaments have sometimes been converted into bone, and M. Rayer has observed, from numerous interesting experiments, that a similar change may be exerted not only in the fibrous but also in the cartilaginous structures.

Thirdly, That tenotomy is not called for in the vast majority of cases, being perhaps only admissible when permanent spasm has located in the extensor muscles, owing to neglect of early reduction.

Art. VIII.—*Some Account of an Epidemic of Pericarditis, which appeared in Kilkenny in the Winter* of 1848–9. By Joseph Lalor, M. D., Physician to the Fever Hospital, Lunatic Asylum, and Union Workhouse, Kilkenny.

The period which elapsed from the autumn of 1847 to the setting in of cholera, in the spring of 1849, was remarkable in this locality for the great variety of acute febrile diseases which prevailed, and for the absence of that usual predominance of some specific form of fever which, during its own prevalence, not uncommonly excludes, nearly altogether, other forms of febrile disease. With the autumn of 1847 an improvement had commenced in the material condition of our people. The employment, the wages, and the supply of provisions which this harvest brought with it, had given a wholesome diffusion to the masses of people who had congregated in our workhouse, in our city, and around our relief depôts, as centres either of pri-

vate benevolence or of public charity, and which had afforded the sole means for obtaining food to so large a proportion of the population.

A decided diminution in the number of cases, and a more sthenic type of fever, were the immediate results of these favourable circumstances, and continued to prevail until the spring of 1849. It is more within the province of the politician or the statist, than connected with my present purpose, to trace the causes of this permanence in the general improvement of the material condition, and with it of the health of the people. But this period was evidently one of transition, and this improved state was not without interruptions, drawbacks, and exceptions. Thus our workhouse had still to suffer occasionally from undue pressure on its means of accommodation; cases of great and long-continued privation were still not infrequent; vagrancy, mendicancy, and overcrowding in the low lodging-houses of our lanes were still unrepressed. Our old typhus and its relapsing congener, dysentery, diarrhœa, measles, influenza, and small-pox, occasionally appeared, in short and fitful outbursts. However, amidst all this variety in the specific form of fever prevalent at any given period, the leading features of a great diminution in the number of cases and a more phlogistic type of fever, prevailed throughout the whole period from the autumn of 1847 to the spring of 1849.

Amongst the inflammatory complications and sequelæ prevalent, perhaps the most general, interesting, and important were pleuritis, pneumonia, and pericarditis. The months of November and December, in 1848, and the commencement of the year 1849, up to the outbreak of cholera in February, were particularly marked by the great variety of febrile diseases prevalent about the same time, and the general tendency of them all to be accompanied by inflammatory local affections, particularly of the lungs and pericardium. The history of our fever hospital for these three months presents, in a concen-

trated form, what was more or less the medical constitution of the previous twelve or fifteen months. The various forms of febrile disease admitted into my wards during this time were, erisypelas, dysentery, variola, varicella, pertussis, urticaria, maculated typhus fever, influenza, rheumatism, diarrhœa, puerperal peritonitis, scarlatina, cynanche tonsillaris, rubeola, simple continued fever, and febricula. The total number of admissions was 232, and in fifty-five of these cases, or more than one-fifth of the whole, serious inflammatory chest complications (exclusive of bronchitis) occurred: viz., pleuritis, pneumonia, and pericarditis, either singly or in various combinations, one with another.

These inflammatory complications arose in the course of the various forms of febrile disease already enumerated, but most frequently in connexion with influenza, which was very prevalent for the three months. Of course the proportional mortality was much larger in those cases accompanied by such serious inflammatory complications than in others which presented only the ordinary symptoms and dangers belonging to their specific febrile class. Thus, of the fifty-five inflammatory cases, thirteen died, whilst out of 177 cases free from such complications, fifteen died, being in the first instance more than twenty-three per cent., and in the latter nearly eight and a half per cent.

As the greater number of those admitted had previously been inmates of the workhouse, so also the larger number of the inflammatory complications occurred in the same class; but the proportion which the complicated cases bore to the admissions was pretty much the same in those admitted from the workhouse and from elsewhere. The proportion, however, which the number admitted from the workhouse labouring under febrile diseases bore to the number of inmates in that institution, was much larger than the proportion which the number of admissions from outside of persons labouring under similar attacks, bore to the entire population of the district out-

side the workhouse, which supplied the cases to the fever hospital.

I met with one case of pericarditis, in my private practice in connexion with pertussis, and it was fatal, and I have reason to suppose that pericarditis occurred during the period to which my observations apply in other cases among the wealthier classes of this city. Several cases of pleuritis, pneumonia, and pericarditis appeared, besides those admitted to the fever hospital, amongst the inmates of the workhouse, and were treated in the non-contagious hospital of the institution. These cases presented from the outset, or from the time when they first came under medical treatment, more of the character of pure inflammation—in which the fever was of a secondary and symptomatic type—than did those admitted to the fever hospital, in which the fever appeared to be the primary, and the local inflammation the secondary disease.

But the line of demarcation was exceedingly difficult to draw, and was, perhaps, more arbitrary than real, for it may well be doubted if diseases so similar in their leading features, occurring epidemically, under precisely similar circumstances, and differing only in the order of sequence of their symptoms, were essentially different. The line of treatment and results were pretty much alike in both. In three only of the cases of pericarditis included in the fifty cases of inflammatory chest complications, was the inflammation confined to that part, and in all the other cases of pericarditis included in this list, the pleura or substance of the lungs was engaged also and almost invariably at the left side. The inferior lobes of the lungs were invariably those affected, and I have not met with any cases in this epidemic of that form of inflammation of the upper lobes described by Drs. Corrigan and Henry Kennedy.

Even when the organs within the chest had been from the first the seat of primary local inflammation, but still more when a purely febrile stage had preceded the local disease, the subjective symptoms did not ordinarily present that clear and

well-marked pathognomic character which might be expected, as well from the vital importance of the affected organs as from the extent of injury which physical examination revealed. In general the cough, dyspnœa, and local pain had rather to be inquired after by the physician, and were not voluntarily made the subject even of complaint, still less of repeated and earnest cries for relief, as is more commonly found to be the case by the medical attendant. This latency of the subjective symptoms, more especially in such a disease as pericarditis, was very remarkable, and it was with no little surprise that I witnessed for the first time an occurrence which afterwards repeatedly came under my observation. It was that of a mother for the first time bringing up for medical advice her child, of the age of seven or eight years, and stating that it had recently and quite suddenly taken ill, the child at the same time presenting a sunken countenance, with the other symptoms of collapse, and the dull, heavy sound of a heart plashing in fluid, of the existence of which subsequent *post mortem* examination left no doubt. I am fully aware of the dislike of many persons, and of parents especially, to have themselves or their children sent into hospital, and more especially a fever hospital, and I know the efforts which they sometimes make to conceal their own illness or that of their children; but I do believe that some cases of pericarditis in this epidemic were presented for medical advice only in the last stage, not from a desire of concealment on the part of the patients themselves, their friends, or their parents, but because the disease really had run its course in such an insidious manner as to be unobserved, or considered as only some trifling ailment.

In some such cases no sense of pain or uneasiness in the region of the heart has been admitted by the patient, often even when inquired after. In others, however, when an opportunity offered of observing the inflammatory attack from an early stage, the physical signs and the objective and sub-

jective symptoms also (unless so far as their latency, already adverted to) were those ordinarily met with, and which it is unnecessary to particularize fully. The character of the pulse was very different, according as the pericardium, the pleura, or the pulmonary substance was the part affected. In pericarditis the pulse was wiry, vibrating, shabby, small and compressible, as if the artery was only half filled.

In the early stages of pericarditis, pain, even though not voluntarily complained of by the patient, was always markedly produced by pressing a finger between the ribs over the heart, or by pressure under the false ribs, so as to bear on the serous membrane,—in the latter case, through the intervention of the diaphragm. When effusion had taken place, a sense of uneasiness or embarrassment of the respiration or circulation, and not pain, were the sensations complained of. When the pericardium was engaged, there was a greater tendency to collapse, and to coldness of the surface and extremities, and the expression of the countenance was more anxious than in mere pulmonary inflammation. The cheeks were sometimes pale, or of a mottled lividity, like that produced by exposure to intense cold. Indeed the lips and cheeks were rather exsanguine, and there was neither the dark, livid congestion of the face of bronchitis nor the bright-red flush of pneumonia. This cold, sunken cheek, with a pinched and corrugated cuticle and thin-drawn lips, of a light-blue shade, showed rather a diminished circulation, and a great deficiency of red corpuscles. In pneumonia unaccompanied by any pericardial complication, a bright vermillion tint of the cheek at one or both sides, according as one or both sides were engaged, was very general. In some chronic cases, with very extensive effusion into the pericardium, extreme dyspnœa and orthopnœa occurred, or a distress and embarrassment of the respiration so great as to render even a brief continuance in the same posture intolerable. This intolerance of rest in any position produced a constant and most harassing desire for change of posture,

allied to jactitation, which banished all sleep. If extreme weariness sometimes overcame this instinctive restlessness so far as for a moment to lull the senses into an unquiet slumber, the horrors of nightmare again quickly aroused the affrighted patient. In such cases the quantity of red corpuscles seemed to be restored, and a congested countenance like that of morbus cœruleus, succeeded to the sunken and half-pallid features of the earlier and more acute stages of pericarditis. I saw a patient in this state survive for several days in the most wretched state of suffering.

As to the exciting causes of the inflammatory epidemic under consideration I can only speak negatively. It could not be traced to the action of cold, either local or general; rheumatism was not prevalent at the same period, and so far was a sthenic state of the constitution from being a necessary antecedent that the subjects attacked were in many instances delicate and emaciated. A remarkable instance of this was presented in the case of Anne Jackman, aged nineteen years, who was admitted to the fever hospital with petechial typhus fever, which ran its usual course until, perhaps, the fourteenth day, when the intellect became clear, the tongue cleaned, and the appetite returned, the pulse, however, remaining quick, thrilly, and shabby. The patient no longer laboured under typhus fever, but from the character of the pulse convalescence could not be said to be established; whilst the great debility and emaciation of the girl might be the cause of the quick pulse, and at all events appeared most unfavourable to the development of any active inflammation. A puffy swelling had appeared simultaneously with the above remission of the typhoid symptoms on the dorsum of the left foot, from the toes up to the ankle, which space was also suffused with a blush of erysipelatous redness. The swollen part was so extremely sensitive that even the pressure of the bed-clothes was loudly complained of, and moving the joints of the tarsus on one another produced intense torture, at the same time

communicating to the hand a very peculiar sensation, somewhat between the crepitus of a fracture and that of emphysema. No complaint was made of pain in the region of the heart, but the pulse was of that character which indicated pericardial inflammation, and the heart's sounds and impulse were obscure, distant, and tumultuous, as if the organ moved in a fluid medium, which at the same time embarrassed its motions and muffled its sounds. On the death of this girl I found extensive honey-comb plastic effusion adherent to the two surfaces of the pericardium, and in the intervening space a quantity of whey-like serum, in which flakes of lymph floated. All the articulating surfaces of the tarsal bones with each other, and with the bones of the metatarsus, were smeared with a purulent coating, on scraping off which, the synovial membrane underneath appeared minutely and universally injected, except where occasional small ulcers had removed it, and exposed the carious bone beneath. This girl had been admitted to hospital on the 20th of December, 1848, and died on the 13th of January following. The date of her partial convalescence was the 29th, and at the time of her admission she was reported as being only one day sick; but it is extremely probable that she had been longer ill, as she was an extern case from the country, and such cases are rarely indeed sent to hospital even on the third or fourth day of their illness.

The *treatment* which I pursued was chiefly local derivation, counter-irritants, and mercury. I never bled generally, and but seldom had recourse to topical bleeding, and even then sparingly. Tartar emetic was sometimes given with the mercury, with which opium, in some form or other, was always combined. Most generally the milder combinations of James' and antimonial powder were considered more eligible. In two cases of pericarditis, digitalis was joined with the mercury and opium. On reviewing my treatment, I do not regret that I was not more energetic; and I consider that the results

were at least as favourable, under the comparatively mild plan pursued, as if more heroic remedies had been used. In fact, the great difficulty in the management of these chest complications lay not in the selection of appropriate remedies when the complication was recognised, but in the latency of the disease, masked, as it generally was, by the concurrent fever, and absence of complaint on the part of the patient, and the slightness of some other of the more important subjective symptoms. When the local affection was recognised in its early stages, even though it presented the formidable character of pleuritis or pericarditis, or of both combined, a moderate but steady course of counter-irritants, and mercurials, by the mouth, by inunction, and on blistered surfaces, premised in some cases by one, or at most two moderate local detractions of blood by leeches, according to the strength of the patient and the acuteness of the symptoms, were sufficient to arrest the disease, at least as satisfactorily as more energetic measures.

When the inflammatory complications did not come under notice until a more advanced stage, the time for heroic treatment had manifestly passed away. In many of the cases it was of great importance to spare the strength as much as possible, and not unfrequently wine and broth had to be administered at the same time that the antiphlogistic measures above referred to, were carried out. It was a very rare occurrence that the constitution could not be brought under the influence of mercury, even in very mild doses, in cases of pneumonia, which appears to render the system peculiarly susceptible of its influence; and this fortunate idiosyncrasy of this disease was taken full advantage of to avoid the exhaustion of more violent antiphlogistic and depletory remedies, especially when it was particularly desirable to husband the vital powers as much as possible, owing to various causes, such as natural weakness of constitution, the concurrence of a debilitating fever of uncertain duration, &c. &c. In many cases the treatment was most

favourably assisted, and I would say, in some instances anticipated by a natural and critical termination, usually either by sweat or diuresis.

Thoracic inflammatory complications continued to appear in fever cases, though not with equal frequency, after the appearance of cholera in February, 1849, until the following summer, when their occurrence became still more rare; and I have not seen a case of pericarditis since the summer of 1849. Very soon after its first appearance, cholera in a great measure usurped the place of other acute diseases previously prevalent, and from its frequency and appalling character, engrossed the chief share of public as well as of medical attention. Our fever hospital wards became quickly crowded with cholera cases, either admitted from the workhouse as such, or occurring amongst patients admitted in fever. As bearing on the mercurial treatment of cholera, it is well worthy of remark, that those persons under the influence of mercury for some inflammatory attack (of whom there were many from time to time) were by no means exempt from cholera, and it is my impression that they were attacked even more frequently in proportion to their numbers than were those who had taken no mercury.

Art. IX.—*On a Variety of Uric Acid Crystals.* By Robert D. Lyons, M. B. T. C. D., M. R. I. A., &c.

Although many deviations from what may be considered as the normal type of crystalization of uric acid have been already noticed and figured by writers on urinary deposits, I am induced to describe an unusual variety which recently came under my observation, with the view of facilitating the studies of the junior micrologist, who is frequently much embarrassed when he meets with appearances differing in any marked degree from the formulized descriptions of systematic works. The subject of the following observations was a patient in

Jervis-street Hospital, during the months of December and January last; and I am indebted to Dr. Neligan, into whose clinical wards he was admitted, for the opportunity of examining his urine. His life had been irregular, laborious, and intemperate, and he had for a number of years suffered from a cardiac affection. About twelve months before he came under observation he had an attack of acute pain in the lumbar region, and shortly after began to pass urine, which became muddy, as he termed it, and deposited a reddish sediment. For this affection he has been subjected to treatment at various periods, but without permanent relief. Omitting those particulars of the case which have no immediate reference to the question under consideration, I shall confine myself to the condition of the urinary secretion. In quantity it seldom exceeded from fifteen to sixteen ounces, was clear on being voided, and exhibited a highly acid re-action; on cooling it deposited a copious pale pink sediment, which occupied about three-fourths of the height of the bottle in which it was contained, in addition to which a blood-red deposit was to be seen at the bottom, forming a stratum about one-sixteenth of an inch thick; this consisted of particles whose irregular shape could be distinguished by the naked eye, but no distinct crystaline appearance could be made out, and the whole presented at first sight no indistinct resemblance to fragments of coagulated blood, for which it might readily be mistaken by a superficial observer. A portion of the deposit, placed under the microscope, exhibited the usual form of lithate of ammonia, with numerous large crystals of a very beautiful and, to me at least, unusual appearance. Their colour varied from a reddish-fawn to a deep brown-red; their shape and size also varied much; they all appeared to be very fragile, a slight amount of pressure on the covering-glass being sufficient to break them into irregular fragments. The smallest were tabular, or, in some instances, lozenge-shaped, and not infrequently cubical: their longest diameter (measured

approximately by Nachet's micrometer eye-piece) about $\frac{1}{300}$ of an inch. The largest were flat, oblong, thin, and of a great variety of shapes, and measured in their longest diameter fully $\frac{1}{200}$ of an inch; an average size for the larger crystals was about $\frac{1}{300}$ of an inch. But it was in shape and grouping that the most remarkable characters were to be observed. All the crystals presented a tint varying from a rich reddish-yellow to a deep brown-red; some in shape resembled the ordinary lozenge familiar to all microscopists, from which they differed only in colour and size, their long diameter being, in several instances, $\frac{1}{200}$ of an inch. Others were piled in thin, quadrangular laminæ, of various sizes, over each other; some represented an ellipse pointed at both ends; some, rhomboidal prisms, and this latter variety was the deepest in tint; some again presented an extremely regular, obelisk-like figure, which, springing from a mass of elliptical and rhomboidal red crystals, all presenting a very pleasing contrast of colours, formed a group of great beauty. The tabular form was the most frequent, the elliptical and rhomboidal next, while the *obeliskoid*, the most beautiful in appearance, were the least numerous; a great variety of intermediate and indefinite shapes, which it would be impossible to describe, existed in abundance. The size, the shape, the variety of grouping, and the colour of these crystals, appear to me to be worthy of notice. I confess that I did not myself at once recognise their true nature, and the resemblance of some of them to the crystaline fatty bodies, in the manner of the superposition of their delicate laminæ on each other, induced me for a moment to mistake their real origin, and to suppose them the product of some cyst, the more so as we know that fatty crystaline bodies will often imbibe a portion of the colouring matter of the blood. The action of caustic potash, and their dissolution with effervescence in nitric acid, with the subsequent formation of crystals of nitrate of urea, recognisable by the microscope, corrected my too hasty impressions.

The works of Golding Bird, Watson, and others, have made us familiar, through their very accurate wood-cuts, with many varieties of uric acid crystals, but I have not seen figured anywhere shapes precisely similar to those I have just described, and I therefore conceived that a notice of the forms which have come under my observation would not be unacceptable, especially to the junior investigator, who is often called upon to decide the nature of a specimen, the history of which he is not put in possession of.

While engaged in writing the above, I have met with another specimen of large crystals of uric acid, precisely similar, as regards size, colour, and variety of shape, to those I have just described. They constituted a deposit sent to me in the dry state, for examination, by Dr. O'Ferrall. In some of the crystals of this specimen a very beautiful appearance occurred from the presence of oxalate of lime, numerous crystals of which, both large and small, adhered to the surface of the prisms of uric acid.

The colour of uric acid deposits is a subject on which it appears to me some obscurity still remains. The crystals, as viewed by the microscope, under ordinary conditions, when they present tables, lozenges, or cubes, are usually transparent and nearly colourless; this may, therefore, be taken as their normal condition. Notwithstanding, however, that all writers are familiar with the occurrence of uric acid sand, exhibiting pink, orange, or red colours, I do not find that any explanation has been offered of this circumstance, which we may look upon as a departure from the normal physical properties of this crystal. I am myself disposed to believe that in such cases the uric acid is tinted by the addition of a substance capable of being separated from it, and forming no necessary portion of it. I should be induced to believe that purpurine was in some measure connected with this coloration of the crystals of uric acid, but for the very decided opinion to the contrary ex-

pressed by Dr. Golding Bird, whose accuracy as an observer is unimpeachable. At page 172 of the last edition of his work on Urinary Deposits, this eminent authority states: "I have never seen purpurine colouring any other deposits except those of urate of ammonia, and hippuric acid, when precipitated by hydrochloric acid. Uric acid scarcely appears to have any affinity for it."

In the remarkable specimen which I have described above, the colour varied, as I have already stated, from a reddish yellow to a rich brownish red, all varieties of tint being observable in the small as well as in the large crystals. The quantity of the specimen was not sufficient to allow of my examining the colouring matter in a complete manner. I found, however, that it was destroyed by boiling the crystals either in a portion of the urine from which they were taken, or in water; alcohol had a similar effect, and the crystals, when subsequently placed under the microscope, were found to have lost colour, and also to have been almost all more or less fractured. Nitric acid also discharged the colour before the crystals dissolved. Hydrochloric acid did not give any increase of colour, as might be expected if purpurine was present; but I must observe that this re-action was not exhibited in the case of the lithate of ammonia of the same specimen of urine, though it presented a decided pinkish tint, before the application of heat or hydrochloric acid. The decolorization of the crystals caused by heating them in urine, water, or alcohol, and the same effect following the addition of nitric acid, lead me to believe that their colour is due to a substance in combination with them, and which is capable of being liberated from them. Against the respected authority of Dr. Golding Bird I will not venture to say at present that this colouring matter is purpurine, or any variety of that substance, but I shall not be surprised if further research prove them to be identical. However that may be, the cause of the great variety of colour observed in different specimens

of uric acid appears to me highly deserving of attention, as constituting an unsettled and obscure point in urinary pathology.

How far a more accurate and extensive knowledge of the conditions under which the striking varieties of colour and crystalization observable in different specimens of uric acid are produced, would lead us to more precise pathological and therapeutical results, it is extremely difficult to conjecture at present. As a question of scientific interest, however, the determination of these points is in the highest degree desirable. The opinion of Dr. Burton, and the results arived at by Dr. Schmidt of Dorpat, in his experiments on the *genesis* of uric acid, afford indications at least of the directions in which such inquiries may be pursued with a probability of successful results. The former is of opinion that the composition of the urine modifies the form of the crystal, and the latter has proved that variations in the rapidity and manner of precipitation will cause corresponding differences in the crystaline forms produced. If the latter statement hold true for the pathological formation of crystals within the body, as well as for conditions of experimentation without, as there seems every probability, we may be warranted in believing that the large crystals, such as I have described, must be the result of a comparatively slow process of formation in some portion of the urinary system. And if such be actually the case, we can readily conceive that an increased liability to the retention and impaction of a crystal is thus afforded, whereby the chances of subsequent deposit and formation of calculus are materially increased.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Lettres sur la Syphilis, à M. le Docteur Amédée Latour, Redacteur en chef de l'Union Médicale. Par M. Ricord. Paris: 1851[a].

We shall now resume our analysis of M. Ricord's Letters, the remainder of which are devoted to an exposition of his views on true syphilis. In the preceding part he endeavoured to demonstrate that if blennorrhagia had a specific cause, it was not always easy, or even possible, to point it out, and he endeavoured to establish that the disease was not the effect of syphilis properly so called, that the consequences were quite different, and that the treatment, unless empirically employed, should not be that which we would use in syphilis.

He now commences by inquiring, where had syphilis its origin? and in whom did it begin? These questions, he fears, cannot be answered; but he affirms that syphilis, as known in the present time, is never spontaneously developed in man, but is transmitted from individual to individual, and yet, as we have already remarked, the disease is not met with in any other class of animals.

It must strike every one who studies history without preconceived opinions, that we find in the ancient writers, those who have written anterior to the epidemic of the fifteenth century, perfect descriptions of what are termed primary symptoms, or rather primary antecedents. Can we find at the present time a more true and more faithful description of them than that given by Celsus? Galen, too, describes acccurately the symptoms on the genital organs, with their consequent affections of the throat. Gulielmus de Saliceto was aware that pri-

[a] Continued from vol. xi. p. 149.

mitive ulcers of the penis were contracted by contact with unclean women, and fully established the relation which existed between ulcers of the genital organs and buboes, &c. But the earliest observers and historians of syphilis seem to have overlooked the exact connexion between primary symptoms and their consequences.

What was the leprosy of that period? Was it the leprosy of the Greeks or of the Arabs with which we are acquainted at present? That it was not is shown by the fact that the ancient leprosy was often contagious, and was often communicated by sexual intercourse. It, therefore, certainly is not the leprosy of the present time.

But here M. Ricord announces that he has no pretensions to a knowledge of retrospective science, the writings of Astruc having frightened him from a labour so great, attended with such slight results, yet he has often asked himself, what was that terrible epidemic of the fifteenth century, and whence came it.

This terrible epidemic of syphilis, which no one who witnessed dreamt of attributing to the New World, was ascribed to this origin in the writings of Orviédo. This fable, which was put forth by Astruc also, our author does not think it worth the trouble to dispute, and only begs to be allowed to make an observation upon it in a pathological point of view.

"To have caused an epidemic," says he, "upon so great a scale, it would have been necessary that all, or nearly all, the sailors of Christopher Columbus should have contracted the disease so as to import it. It would also have been necessary that, during a very long voyage, which in those times was not made by steam, the primitive sores should have rested in the stage of progression or of specific *statu quo*, and have been capable of furnishing contagious pus. Again, wonderful to be told, the sailors of the fleet, having arrived at Lisbon and Bayonne, did not infect the women of these ports, and yet is it probable that, contrary to the habits of sailors of all times, these men, after a long voyage, did not mix with women after their arrival in port. It was not to the women of Lisbon and Bayonne that they communicated their disease; they left for Italy where they joined the army of Gonsalva de Cordova, in May, 1495, and it was there that they communicated the disease—but to whom? I cannot tell, if it was not in Italy, in the midst of the three armies, Spanish, Italian, and French, and there a disease already known, in 1493 or 1494, raged with fury, each of the belligerents throwing the shame of having communicated it on the other!"

M. Ricord does not wish to pursue further an inquiry into a history so obscure, the more particularly as he can throw no light upon it. He merely inquires if the epidemic of the fifteenth century resembles the venereal diseases of the present time, and to this he answers,—certainly not, for the disease, as observed at present, resembles infinitely more that described by the ancients than that of the fifteenth century.

The author, having studied with care the description of the epidemic of the fifteenth century, had his attention drawn to the fact, that the manner of transmission, the predominance of constitutional symptoms over primary, which were not present, or, if they had been present, were unobserved, seemed to resemble much more—as far as our present knowledge enables us to judge—the character of acute glanders or farcy than syphilis. Van Helmont, however, has broached a similar idea, which has been looked on with ridicule, his idea being that syphilis was derived from farcy. The knowledge of glanders and farcy attacking the human race is but of recent discovery; but the aptitude of the human race to contract this disease from horses, which has been known for ages to have existed amongst them, cannot be of modern date, and, doubtless, patients attacked by glanders and farcy were formerly supposed to have laboured under syphilis.

The manner of transmission of the epidemic of the fifteenth century demands attention. It is recorded that the disease was communicated by the breath from one to another in the churches, &c., and so great was the belief in this manner of transmission, that Cardinal Wolsey, being accused of having syphilis, was tried for whispering in the ear of Henry VIII. This manner of transmission, as regards the venereal disease, which demands immediate contact, is inexplicable; and that it was not believed in by all is well known, as we find Fallopius laughing at others for their credulity. The epidemic was considered by Paracelsus and others as an admixture of the old venereal disease with leprosy, but might it not be more probably considered as an admixture of the ancient venereal virus with glanders and farcy? glanders, so common amongst horses, and especially during war, from the attendant circumstances. M. Ricord thinks that he does not go too far when he says that we owe the first glimmerings of light upon this subject to the labours of Rayer and his school, and to Renaud (of Alfort), who have proved with what a terrible disease man has been afflicted, and in which he sees so close a resemblance to the epidemic of the fifteenth century.

What a field here opens for observation? Who as yet knows

what are the effects of glanders transmitted from man to man, and what changes the symptoms undergo as they become more remote from their primitive source? The effects of hereditary influence are unknown, for although we are aware that patients affected with glanders have the power of procreation, we are as yet ignorant what are its effects upon the offspring. These ideas being nothing more than hypothesis, our author adopts the same conclusion, as to the origin of syphilis, as Voltaire did with regard to the fine arts, viz., that neither their origin nor inventor has yet been discovered.

M. Ricord next proceeds to attempt to determine the source where the specific cause of the morbid poison producing syphilis is found,—a poison which we are no longer afraid to call by its proper name, *syphilitic virus*. This virus was but some time since formally denied to exist, and even the learned Jourdan exclaimed, in an access of passion,—call it what you please, but do not give it the name of virus. The knowledge of its source he states that he has attained by means of the point of the lancet. It was by studying comparatively the different symptoms reputed as syphilitic he arrived at the demonstration that but a single condition regularly supplied purulent matter, which, on being placed in circumstances we are about to point out, caused, in virtue of a special irritation, an ulcerative inflammation, identical with that from which it had its source, and which produced in its turn the same special secretion, the same morbid poison, and that without limits. The syphilitic virus, under favourable circumstances, inevitably produces the same primitive phenomenon, to which has been given and which still preserves the name of chancre; and it is only, as has been already remarked, when we can see the surface from which the morbid secretion with which we are about to experiment has been taken, that we can with certainty obtain positive results and again reproduce them.

"This," says the author, "is also the experience of MM. Puche and Cullerier, at Paris; Beaumés and Diday, at Lyons; Renault, at Toulon; Serre, at Montpellier; Thiry, at Brussels; Laffont-Gouzy, at Toulouse, &c.

"Whenever a chancre has been produced from matter which was not taken directly from a primitive ulcer, the secretion was furnished by surfaces which could not be seen. The small number of cases, apparently exceptional, in which a chancre could be reproduced with purulent matter taken from a non-ulcerated surface, find their rational explanation in facts analogous to those the history of which has already been given. As regards the surfaces that cannot be seen, how can it be concluded

that they were not the seat of chancre, when they furnished a similar secretion? If it were proved that the primitive sore, the fatal source of the syphilitic virus, could exist only upon exposed surfaces always visible; that the depths of the urethra and the cavity of the uterine neck could not be the seat of these concealed ulcerations,—if that were proved, it would be sufficient; but does there exist a writer on syphilis who denies the existence of a primitive ulcer in these regions; who does not know, and who does not believe that syphilitic ulceration is not always visible? How then deny the possibility of the existence of concealed and deeply seated chancre, when it furnishes itself the most irrefragable proof, that is, its peculiar secretion."

It has been urged that inoculation does not prove the existence of the specific cause of syphilis; that it would be preferable to abide by the ordinary results of contagion to arrive at that proof, inasmuch as with any description of pus could be produced the effect, which M. Ricord holds could be produced only with pus taken from a chancre; that it may be caused by any description of pus, whilst by the mysterious way of ordinary contagion phenomena are observed which inoculation could not produce. "It is at least strange that these arguments are employed equally by the believers in a syphilitic virus, and by those who deny its existence. In fact, what say the physiological physicians? That with any sort of pus, no matter whence derived, we arrive at the same result, that is to say, at the production of all sorts of venereal diseases." "And upon what do they rely to maintain this doctrine? Upon all the uncertainties which usually accompany the circumstances under which venereal diseases are contracted; upon the neglect of examining females; upon the plurality of results caused by one woman upon many men, when some escape; in fine, after all the fictions that we have already pointed out and combated, and after what the speculum has brought to light, we are truly astonished to see men of such undoubted merit as M. Cazenave wish still to support such antiquated doctrines."

But M. Ricord is also astonished at those who, believing in a syphilitic virus, recognising in syphilis a specific cause, and a virus with a specific action, maintain that with any description of pus effects can be produced analogous to those of virulent inoculation. "Do the partisans of these doctrines," says he, "think that inoculation with any description of pus will produce vaccina or variola? If we gave them purulent matter whose origin and source they were unacquainted with, what would be their criterion to determine its nature, if it were not

the effects produced? And is it not thus that we should distinguish syphilitic pus?" The author has inoculated the same patient a hundred times with the pus of chancre, with the pus of *balano-posthite*, with the muco-pus of urethral blennorrhagia, with the muco-pus of blennorrhagic ophthalmia, with pus furnished from phlegmonous inflammation from other regions of the body, and yet it was only the pus of chancre that always reproduced chancre, the others remained without action. What more proof can be wished for, and what can be opposed to it?

Another objection also has been raised. It has been said that inoculation proves nothing as to the nature of the cause by the effects that it produces upon an individual already infected: in other words, by inoculating the patient with the secretion furnished by himself, no conclusion can be arrived at, as every wound can, and ought to become syphilitic. "This," says M. Ricord, "is a strange error, the consequences of which might be very serious, a dangerous prejudice that we are astonished to see existing under the patronage of observers who have pretensions to exactness and precision. The facts just related completely remove this objection. No doubt, cases have been cited of the bites of leeches which took on the characteristics of venereal ulcers, but such, assuredly, would not have been the case if contagious matter had not been applied to them. Apply leeches where there is no contact of contagious matter, bleed syphilitic patients as often as you wish, perform any operation upon them, and you will have no chancres produced if there has not been virulent contact. If a patient suffering from constitutional syphilis contract a fresh chancre, and be inoculated from it, as also from a constitutional sore, the result is, that the inoculation from the chancre only gives positive results. To obtain the result with certainty it is necessary that matter be taken from a chancre at a certain period, that is, at its period of progression or of specific *statu quo*."

If Bru did not succeed in inoculating the pus of a chancre he either made an error in diagnosing that to be a chancre which was not, or he used pus taken at *the period of reparation*. For the author lays it down as an axiom, that *the pus of chancre is beyond doubt inoculable*.

This virulent inoculable matter may present all the varieties of pus or muco-pus, it may be either acid or alkaline, it may or may not contain animalcules. These different conditions, which appear contradictory, and which seem to have puzzled those denying the existence of a virus, are characteristics of the vehicle carrying the virus, and not of the virus itself. Putrid pus is not more virulent, and gangrene *kills* the

virus; but it is not injured by being kept, and may be preserved in like manner as the vaccine infection.

Inoculation has proved the truth of the different modes of contagion, which were heretofore contested by those who believed in the necessity of a physiological action, and of an orgasm of the part which was to furnish the contagion. The observations of Hunter have proved that patients were infected from contact with the seats of water-closets; and those of Fabricius Hildanus, that the disease was contracted from sleeping in sheets which had been used by infected persons. Whatever be the fact, no matter whether it be skin or mucous membrane, or in what region, a *slight solution of continuity of texture is sufficient, without the aid of any physiological act, to cause its certain production.* There are no refractory constitutions, as there are to variola and vaccina; all are affected alike by the point of a lancet charged with virulent matter.

We see chancre develop itself on all parts of the body without any special physiological state either in infecting or infected parts; and we find the parts most predisposed to receive its virus are those where the follicles are voluminous and numerous, in which the virulent matter reproduces and develops itself. An abrasion is necessary; it is the gate by which the poison enters; no special state of orgasm is required, but simply a traumatic state of the parts. Nothing is more common than that the physiological act of generation should escape without infection, whilst other acts, by no means physiological, are attended with the saddest results. Contact, the most complete, attended with the most voluptuous orgasm, the skin or the mucous membrane remaining entire, is unattended with any danger, whilst if there be but the slightest excoriation, the merest touch is followed by the saddest consequences.

In all affections incontestably contagious, we find a traumatic condition to be most active in producing the disease; and that, under ordinary circumstances, art can repeat what nature has effected. Thus, inoculated vaccina does not differ from ordinary vaccina; the inoculated variola does not differ from that spontaneously produced. Such also is the case with glanders, farcy, hydrophobia, malignant pustule, carbuncle, and hospital gangrene. This argument, considered analogically, appears of incontestable value. Why should the syphilitic virus be an exception to the ordinary rule?

But some contend that chancre is not the only contagious symptom attendant on syphilis: there are secondary syphilitic symptoms whose *contagion* the lancet has not as yet discovered; that, in fact, science has accumulated facts which have ap-

peared conclusive to a number of physicians, and which have caused others to doubt. Mucous pustules are looked upon by many syphilographers as contagious, and, consequently, to be transmitted. But when M. Ricord tested this by means of inoculation, having a due regard to all the circumstances by which error might be prevented, his experience has always been negative, although others have obtained positive results. He inoculated the pus from mucous pustules which were in the neighbourhood of the vulva of a young girl of Versailles, who constantly had connexion with the soldiers of the garrison, and he obtained positive results. Very much astonished, he re-examined more carefully the surfaces from which he had taken the matter, and he immediately found a chancre still at the specific period. Fresh comparative inoculations made with matter taken from this chancre, and from pustules at a distance, gave a positive result as regarded the former, and a negative for the latter. This experiment appeared to him decisive.

" Amongst the cases that have been cited in which mucous pustules have given rise to syphilitic symptoms, no account has been given of the time which elapsed from the infecting connexion. It is always in three weeks, a month, two months, and even later, after contagion that the patients have presented themselves: so that not only is the true form of its commencement not evident, but still more, it is impossible to determine the true nature of the symptoms which were the source of the contagion.

" Some forget, and others are ignorant that, by a succession of metamorphoses easy to be observed by those who take the trouble, the primitive symptoms (chancre) pass from the state of an *organ* of virulence to the condition of a secondary symptom, furnishing no longer specific pus. Where are the cases to be met with of individuals with mucous pustules who have transmitted the disease to another person that has fallen under observation the second or third day after an infecting connexion, and in whom the disease has appeared, as we see it appear, following on the contagion from chancre? In such cases does the disease commence by a chancre or by a mucous pustule? There is not a single incontestable fact which can answer this question." But M. Ricord adds, that he is in possession of many cases where connexion was constantly had with those labouring under mucous pustules without infection taking place. Amongst the proofs brought forward to strengthen the opinion of mucous pustules being contagious, is their successive development upon contiguous parts of the skin to where they first appeared. The advocates of this opi-

nion forget to take into account one circumstance, namely, the *cause* of the appearance of the *first* pustule; that is the constitutional disease under which the patient labours, and which gives rise to their *successive* appearance. The consideration of the seat of predilection of these pustules cannot in any manner come to the assistance of the doctrine of contagion; in fact, if there be contiguity in the parts of the skin where they appear, it is necessary also to remark that the acrid secretions are more energetic on these parts; that the skin there has a tendency to undergo *mucous transformations*, as we see in the neighbourhood of the genital organs, of the anus, &c. "How would they explain, by contagion, the development of these mucous tubercles in both axillæ"?

Those who believe in these pustules being a primary symptom M. Ricord asserts have made an error in diagnosis, and adds; "It should be recollected that chancre at the period of reparation often takes on the appearance of a mucous tubercle, and that it sometimes undergoes a true metamorphosis and becomes, *in situ*, a secondary symptom, whose appearance and nature are those of a mucous tubercle. If then we were not witness to its commencement, or if we neglected to examine the proof given by the neighbouring glands, the remains of its ulcerated edge, the character of its base, so modified that it is difficult to make a differential diagnosis, more especially by those who observe but little and whose touch is but indifferently cultivated; and if we add to the above, certain peculiar situations where primary symptoms are not generally found and where also the transformation of chancre is easier and more rapid, viz., on the lips, the tongue, the nipples, we shall see how easy it is to be deceived. All those cases in which the disease has been transmitted by lascivious kissing, by the utensils of the table, by pipes, by razors, by masks, &c., have indeed no other origin. And how often have these been made an excuse to hide the sure cause!"

Many practitioners will scarcely credit the facility with which a chancre passes into a secondary state; they are led away by its situation, and when they see a chancre on the mouth, from that circumstance alone they believe it to be a secondary symptom; but here, as a primary symptom, they are of more frequent occurrence than might be believed. If mucous pustules are not transmitted by sexual intercourse, no more are they transmitted by other means.

The transmission of secondary symptoms from the nurse to the child, and *vice versâ*, is of special importance. The fact of this transmission is generally admitted. Hunter, however,

denied it, and many able observers agree with him. This question requires special attention; it is a question of public hygiène; often a medico-legal one, as in case of fraud, dishonesty, or avarice. It is, therefore, important that we should be upon our guard against all causes that might lead us into error, and not receive with implicit faith the word of those whose interest it may be to deceive us.

If we consult the archives of science, and seek the basis of the opinion upon which the contagion of secondary symptoms conveyed from the child to the nurse, and from the nurse to the child rests, we are astonished at the little value of the facts, and are surprised to see with what little evidence the most learned are content. "M. Bouchut, for example, in his memoir, recently published in the Gazette Médicale[a], has gathered all the facts which seem to him the most conclusive, and what are they? Read this essay, otherwise interesting, and you will be convinced with me, that the greater part of the facts are not admissible; that the observations which would appear the most conclusive are wanting in essential details, and are so incomplete that M. Bouchut himself is forced to admit it, finishing by stating that his conviction is more moral than scientific."

M. Ricord has seen nurses and the nursed, who were mutually accused as having communicated the disease. Most frequently he has been able to establish the fact that the *point de départ* was a primary symptom, occurring in either one or the other, sometimes in both; again, he has been called too late to determine, as in cases when the child was not presented to him until it had been with the nurse for five or six months, or even longer. He has had for many years the care of nurses in the "Hôpital du Midi," and amongst them often some affected only with simple leucorrhœa; and he has often given them children to suckle affected with secondary symptoms, who were sent from the "Maternité," and he has never seen these nurses become infected. To reverse the case, the nurses affected with well-marked secondary symptoms have been given children to suckle who had been sent to him, it having been believed that they were suffering from syphilis, when they were only attacked with simple eruptive diseases, such as eczema, impetigo, or varieties of porrigo, and these infants have never become infected. His learned and laborious friend, M. Nonat, who for a long time had a similar charge, has arrived at the same conclusion. From his private practice he also gives a very remarkable case of a child born with hereditary syphilis, whose

[a] April 20, 1850.

mouth was extensively ulcerated; and though suckled for eighteen months, the nurse remained perfectly healthy. From this, he adds, we learn how necessary it is to examine all sides of the question, if we do not wish to deceive ourselves, or be deceived.

The nurse, when she takes a child, may be under the influence of a syphilitic diathesis, and which has not as yet appeared. Nurses are not examined with sufficient care; and even if they were, we might be deceived, for the diathesis may exist when all trace of primitive or secondary disease has disappeared, especially when the ulcer was in the neck of the uterus. He also affirms that the health of the nurse's husband is not a sufficient assurance, for he has long known how to value the "pure and simple manners of the country!"

The child may be born with an hereditary syphilis; and both nurse and child may as yet show no symptoms of disease. For the child may be born apparently healthy, but after some weeks or months, secondary symptoms may appear. These may become manifested in the child during or after a similar manifestation in the nurse. So that the first in whom they appear is accused as having given the disease to the other, if both are not simultaneously accused, which frequently occurs. They may be both in the wrong; there is a simultaneousness and coincidence, and by attention and patience we may arrive at the truth.

"It sometimes happens that the nurses contract syphilis whilst they are suckling, and the contagion may enter by many ways, most usually by the genital organs. This is not an unfrequent occurrence amongst nurses who come to Paris; under such circumstances the nurse infects the child by means of her fingers, contaminated with the virus; they even infect their husbands, and in such cases the blame is always thrown upon the Parisian baby, '*ces enfans pourris*,' so say these chaste nurses. The poor rustic husband is extremely candid as to how he was infected. The nursed child is the source of all his misfortunes!"

The nurses frequently inoculate their own nipples by their contaminated hands, and so the child becomes infected; again, a nurse may be infected by a person who draws or sucks her breast, and so contaminate the child.

A child may contract chancres at the time of birth, if the mother be then affected. This is of rare occurrence, but nevertheless possible. These chancres which can easily be confounded with secondary symptoms may become the infecting cause for the nurse, and are then looked upon as secondary symp-

toms. What may give an appearance of truth to this is, that, being called to see them too late, the chancre has healed upon the mother; no trace is left, and if the *legal* father has any recollection of a blennorrhagia in his early youth, it is immediately put down as hereditary taint!

Children at nurse may be infected by strangers who are not suspected. They may then infect their nurses, who before they perceive the illness of the child wonder at their own disease, and by this time secondary symptoms have appeared in the child, for at that early age they always develop themselves with extreme rapidity. The *point de départ* is thus masked, and hence another source of error.

The child may be handled by a visiter who is diseased, and so be infected; and thus the mother, the *legal* father, and the nurse may be perfectly healthy, yet the child be affected with constitutional syphilis. "How reserved, then, should we be, and what prudence, caution, and attention should we bestow upon the contagion of secondary symptoms, before we acknowledge it as a demonstrated fact."

M. Ricord does not, however, absolutely deny the possibility of the transmission of the contagion of secondary syphilis; but says that it is not yet proved by observation, and that, if ever it be so, inoculation alone can demonstrate the fact. The late Dr. Wallace, of Jervis-street Hospital, in this city, published two cases of what he believed to have been successful inoculation from secondary symptoms; but M. Ricord, having analysed them, does not believe that they will lend much assistance to the opinion that secondary syphilis is contagious. When on a visit to England, he was shown, in St. Bartholomew's Hospital, men and women affected with secondary symptoms, who were said never to have had the primary disease; but being a sceptic, he took the liberty of making an examination for himself, and found a primary sore where it had not been sought for. To return to Wallace, he remarks, that it was curious that he, who had made so many inoculations, had succeeded in but two. These, then, were exceptional cases; but he can allow of no exceptions,—either secondary symptoms are inoculable, or they are not. Ricord, with M. Puche, has again lately made many experiments by inoculation of secondary symptoms and they have always found the results to be the same, viz., negative. These experiments having been always tried upon the individual himself, it may be said that secondary symptoms are not inoculable upon those already affected with them; yet they might be perfectly inoculable on a healthy subject. That objection may be made by believers in his doc-

trines, but he does not think it can be urged by those who are directly opposed to him, whose doctrine is, that so far from constitutional syphilis hindering a fresh contagion, it is only necessary to make a simple wound upon a syphilitic patient, and immediately it will take on the venereal character.

As to the transmissibility of the syphilitic virus to animals, and the experiments of M. Auzias-Turenne, our author denies that they are capable of receiving the true syphilitic virus; secondary symptoms never having succeeded to inoculation in them; and he believes that they are merely the receptacle for the time being of the poison; that the virulent pus inoculated acts only as a cauterized point, irritating and causing suppuration, but not combining with the tissues. The opinions of M. Cullerier on this subject quite coincide with those of our author.

Before advancing farther with his subject, M. Ricord wishes us to receive the following proposition as unshaken:

"*A chancre* (*primitive ulcer*) *at its period of progress, or of* statu quo *specific state, is the only source of the syphilitic virus* (*morbid inoculable poison*").

Let us now study the pathology of development of chancre.

"If we make a puncture with a lancet charged with virulent purulent matter, this puncture, which ought scarcely to bleed, soon reddens and becomes prominent, its summit is raised by serum, which immediately becomes turbid, and takes on the character of pus. Thus, puncture, redness, papula surrounded by an areola, vesicle, vesico-pustule, and finally pustule,—such is the constant succession of phenomena produced by inoculation. This succession invariably takes place, ending in a well-marked ecthymatous pustule."

This pustule is often depressed in its summit, umbilicated at the point which corresponds to the puncture, and upon which we most generally perceive a very small drop of dried blood. If the pustule be not broken, the pus which it furnishes becomes dry, and it terminates in the formation of a brownish, greenish, or blackish conical-shaped crust. This crust increases from its base, for it covers an ulcer the circumference of which tends to increase. In this increase of ulceration under the crust, the epidermis, the areola which surrounds it, and the edge are successively raised up by the suppuration. These, again, arise in turn to form a new disc of crust, whilst a new areola forms itself at the circumference, and so on.

The red circle (the areola) which surrounds the crust is generally tumefied, and embraces it as a watch-case does the glass; nevertheless, as there is always increasing ulceration and

new deposit, the circumference of the crust is always softer than the centre, and is in general not very adherent. Sometimes the crust or scab is early formed; at others, the pustule remains entire for a greater or less space of time. This pustule cannot acquire a very great size; it is often at its commencement not larger than a small bean; later, its surface may equal that of a silver fourpenny, or even of a shilling, but it is by no means rare to see it attain much greater dimensions. The pustule then presents these transitions that we so often observe in other forms, and which gives the appearance of rupia, whether before the formation of the crust, or when the crust is formed.

If the pustule be broken on the second or third day, as in cases of rapid evolution, if it be broken later, as in ordinary cases, or if the crust becomes detached, there is found beneath an ulceration affecting the entire depth of the skin, perfectly round, and its edges formed as if they had been cut out with a punch. The edges of this ulceration are a little œdematous, swollen, dentated, and everted, and are surrounded by an areola which constitutes the margin; they are covered with a diphtheritic layer, that is, a peculiar adherent pyogenic membrane. The surface of the ulcer secretes a badly matured pus, sero-sanguineous, often reddish, and loaded with organic detritus. This is the virulent inoculable pus. When the surface of the ulcer is cleansed, we find a better marked diphtheritic layer than on the edges, and which is also formed by a special pyogenic membrane, of a gray colour, lardaceous in appearance, and which cannot be detached. The bottom of the ulceration lies upon a base more or less thickened and swollen, according to the progress made by the ulceration; a progress which is especially determined by the nature of *the soil* in which the *syphilitic grain* has been sown. The ulceration which has been described, and whose tendency is to increase, may be arrested at the extent here described, there remain stationary for a month, six weeks, or even longer, or continue to increase very considerably, and thus present important modifications.

In the numerous inoculations which our author has performed, the following has been the course almost invariably run:—Evolution always appearing at the place of puncture; the constant production of an ecthymatous pustule, the ulcerated excavation of which presents the pathognomonic characters and types of chancre; the ulceration having a constant tendency to increase, or remaining in a special *statu quo*. Thus, then, artificial inoculation has overturned all the theories which

have been professed and handed down for ages; not alone the physiology of Broussais, but the doctrine of physiological contagion, the invention of a later date. Can the theory of incubation be sustained in the face of the results of inoculation; results that can every day be repeated, for it is not an unique or exceptional fact that is here detailed, but numerous identical facts, always giving rise to the same phenomena?

Like a grain of seed, the syphilitic virus springs up where it had been sown; and like a *ferment*, the parts which are first touched by it first ferment. All this happens with greater or less rapidity, as has already been said, according to the qualities of the soil, or their aptitude to ferment; but all this takes place invariably at a point at first extremely circumscribed in a well-defined sphere; the boundary of which, at a later period, we can scarcely limit.

The non-existence of a period of incubation, so truly and so logically pointed out, is not as yet admitted; old prejudices have the force of law, and it is not easy to overcome them.

The advocates of incubation, and those who believe that if they did not allow its existence they would compromise the virulence of syphilis, have urged the argument, that if instantaneous and uninterrupted effects are obtained by artificial inoculation, if a local evolution be not observed, if there be an apparent silence of the system, and nothing which betrays a general participation of it in the syphilitic contamination, it is because an organism already impregnated and infected has been acted on; the inoculation has been performed on those who had been already contaminated.

In addition to what has already been observed as to the effect of wounds and operations on syphilitic patients, there is another answer to this objection, namely, the effect of inoculation on a healthy individual. In them, the results of inoculation were identical with those of the others, that is to say, immediate action, uninterrupted evolution, and production of an ecthymatous pustule. "But does artificial inoculation always give rise to the same uninterrupted series of phenomena? Are there not cases in which, between the inoculation and the manifestation of the symptoms, there is an interval, a time of inaction, as in the inoculation of the cow-pock? In contagion contracted in the ordinary manner, does it not appear that there always is a period sufficiently long between the action of the cause and the manifestation of the effects? Yes, beyond doubt, and these are the cases which might justify, in some degree, the theory of incubation. But if we take pains to examine these facts with attention, we shall see that they have been

incorrectly appreciated. Let us endeavour to reduce them to their proper value, and to bring them under the preceding established laws. I have said that such cases have never come under my observation in my numerous experiments, which have always been made in public. This is evidently owing to the uniformity of the proceeding which I employ. My colleague, M. Puche, has arrived at the same conclusion, and has but once or twice seen the symptoms appear on the second or third day after the puncture. Indeed, all who have studied the inoculation of syphilis are well aware that when the evidences do not succeed immediately, the result is negative. Nevertheless, we can easily conceive that when the puncture made is too superficial, the virulent pus deposited upon surfaces which have been scarcely denuded will necessarily take a longer time to make an impression on the part, and to produce its effects. This I have observed in the case of M. Robert Welz. The first puncture made by himself was too superficial, and produced no effect for a few days. So that in this case there was a something which might be said to resemble incubation. But the second puncture, which was made by myself, followed the regular course." Those who believe in the influence of the syphilitic virus upon the entire system will no doubt say, that the first puncture made here was slowly developed, because the system was not sufficiently impregnated. The effects of the second puncture, on the contrary, had been rapid, because the virus had pervaded the entire system. But as M. Ricord observes, M. Welz made also a third puncture on himself, which being, like the first, too superficial, its results were but slowly developed.

Here, then, is the key to incubation. It is easy to comprehend, with its aid, how, in cases of contagion, as usually acquired, the virulent pus deposited upon surfaces more or less abraded, and consequently fitted to receive the poison more or less quickly, become affected with greater or less rapidity. Daily observation, and also, as M. Ricord observes, the recent experiments of M. Cullerier, have demonstrated in the most convincing manner that virulent pus can remain in contact with healthy tissues without causing any alteration in them, or becoming altered itself. It is also well known that surfaces constantly bathed in virulent pus, which is both acrid and irritating, become excoriated before being specifically affected; and that these surfaces finally become eroded, and, being placed in a susceptible condition, become inoculated. Vesication, to be produced, requires a greater or less degree of time, and so, before the specific effects can be manifested, incubation is simulated. " For example, let virulent pus be deposited in a fold

of the vulva, in the vagina, the prepuce, or the interior of a follicle, and it is only after a certain lapse of time, the pus having passed through the different successions above-mentioned, that the effects of inoculation become evident. There is no special pleading here, the evidence is physical and material, and it can be demonstrated daily to those who are not *blind*, or who do not wish to be convinced.

When inoculation fails, the puncture sometimes becomes a little inflamed, but almost instantly disappears; it must, however, be acknowledged that here, as in cow-pock, we occasionally meet with *false pustules*. Their appearance, if superficially examined, may induce error. M. Puche frankly acknowledges that he has been deceived by these *false pustules*, when he formerly inoculated the muco-pus furnished by balano-posthitis. So that, at the present time, he does not place the same value upon the facts contained in his *memoir* as formerly,—an observation made by our author on his authority. This confession is an answer to the great stress which has been laid by some of the author's opponents upon the inoculability of the muco-pus of non-ulcerated balano-posthitis, wishing to prove from this circumstance that chancre is not the sole lesion which furnishes pus capable of inoculation, and that blennorrhagia which inoculated itself might not arise from an ulcerated surface.

These *false pustules* are but slightly developed; they are most generally but simple bulb-like elevations, beneath which is found a superficial vesication of the skin. It is not a complete disorganization of the dermis, with loss of substance, such as is observed in true inoculation. In some rare cases a deeper degree of inflammation may be present, and produce an appearance similar to furuncle; but its progress is always, and even in these cases, extremely rapid, its duration ephemeral, from three to five or six days, at most, and the cure following as quickly without the intervention of any treatment. M. Ricord confidently affirms, that when inoculation is successful, chancre is always developed as a pustule. This is, he says, incontestible, and the pustule can always be reproduced at will, and without failure. But he does not pretend to say that it always occurs in the same perpetual, immutable form. Nothing would be more fallacious, as daily observation proves that its appearance and course vary in different cases.

Under the most ordinary circumstances chancre commences as a primary ulceration, superficial or deep-seated. The primary sore does not always destroy the entire substance of the skin or mucous membrane. Thus, upon the semi-mucous cover-

ing of the glans or prepuce the ulceration may be so superficial as to lead to the belief that it is a balano-posthitis, and thus justify certain inoculations which have been made. Primary ulceration is produced if the virulent pus has been deposited either upon a surface recently denuded, or upon a bleeding wound, or, what is more rare, upon suppurating wounds. M. Ricord has sometimes seen chancre appear even as an abscess: the possibility of such an occurrence has been denied by some. The bites of leeches often become inoculated, and present the ecthymatous form, it is true; but it sometimes happens that the virulent pus inoculates the bottom of the bite without effecting its edges, which may then become united, and thus inclose the virus, when a small virulent abscess of the subcutaneous areolar tissue is thus formed, which, as soon as it opens, or is opened, constitutes a chancrous sore. This fact is to our author one of every-day observation, and from this theory of simple abscess as a first stage or period of chancre, an argument in favour of the existence of primitive bubo (*bubo d' emblée*) has been advanced, which he does not acknowledge as true, and which is contrary to his theory. But whatever may be the variety in the first appearance of chancre, it has no influence upon the ulterior form of ulceration. This point is of importance, for on it hangs the question of a unity or plurality of syphilitic poisons, a question still sufficiently obscure, or rather obscured by the vague and unprecise manner in which facts have been recorded.

In M. Ricord's experience, when an inoculation is made upon the patient himself, the ulceration which ensues assumes the form and presents the same varieties as the primary sore which had furnished the pus for inoculation. Thus, if the pus be taken from a phagedenic chancre, the ulceration will assume a phagedenic character; if from an indurated sore, it will take on an indurated form, &c. " But in cases where a sound person has been inoculated from a diseased one, is such always the case? Of this we are ignorant, for in the inoculations which have been made by other experimenters, they have neither noted the form of ulceration from which they had taken the matter, nor the form of ulceration which had followed; being contented, as regarded both one and the other, with the expression—chancre followed. So that, inoculations so practised do not throw much light on the question."

" The question, then, of a plurality of poisons, so much insisted on by some English surgeons, is far from being satisfactorily settled. At present, therefore, we have a right to believe in the existence of but a single virus, and that the ulterior

conditions are determined by the condition of health of the individual in whom they may be developed.

" In fine, the great varieties presented by chancres in their progress may be defined as, simple chancres; inflammatory chancres, with a tendency to gangrene; phagedenic chancres; and indurated chancres."

Observation teaches that under the abuse of ardent spirits, and especially during the warmer seasons of the year, simple chancre rapidly becomes inflamed, and that inflammation in certain regions of the body, more especially the genital, gives rise to œdema, which rapidly runs into gangrene. As regards the other varieties, phagedenic chancres, pultaceous, diphtheritic, serpigenous, &c., they are produced by certain hygienic conditions, such as unhealthy habitations, bad living, want of cleanliness; the improper employment of mercurial ointment, or the use of it in a rancid state; certain diatheses, as the tubercular, the scrofulous, the herpetic, and the scorbutic; under those conditions which favour the production of hospital gangrene; and, as we shall afterwards see, the influence of an anterior syphilitic diathesis.

M. Ricord expresses his belief that there is but a single virus, and considers the cases related by Bell and others to prove the contrary, as being but mere coincidences. Having taken it for granted that there is but one virus, he next proceeds to consider its most important variety, viz., indurated chancre. The fact of induration being attendant upon chancre has long been known, and some have even pretended that they could find traces of this knowledge in the writings of Galen, which does not in the least astonish him, as he believes syphilis to have had an ancient origin. But what is most certain, is, that after the great epidemic of the fifteenth century, this symptom was early described by syphilographers. It especially did not escape Jean de Vigo. However, the honour of the discovery has been given to Hunter, and the indurated chancre even bears his name. But yet Hunter does not require this symptom should be a constant attendant on chancre, and in this he was right, for it is not an attendant upon the majority of primary sores. Nor has he made it the condition of constitutional infection.

Syphilographers, after Hunter's time, even Bell, have not been acquainted with the full value of induration as an attendant on chancre, and since the time of the latter they do not seem to have paid much attention to it. M. Lagneau, in his work on syphilis, does not seem to think it of much consequence; yet M. Lagneau has recognised, with Bell and others, that chan-

cre could have a pustular stage, but there is a singular confusion throughout his work between the chancres which he calls *primitive*, and those which he calls *secondary*. In all cases induration with him goes for nothing. According to M. Cazenave all chancres are *primitive*, *secondary*, *or secondary primitive*, a distinction the author declares he cannot understand; but induration, that symptom of so much consequence, does not seem to exist in his ideas.

All chancres do not become indurated; in the present day it is undoubtedly the smallest number which do so; and if M. Ricord's doctrines are correct, this number will still more diminish. But what is the individual cause, the necessary ulterior condition to the insertion of the virus which shall cause the chancre to become indurated? This is one of the most interesting problems that can present itself in the study of syphilis, and its solution is equally difficult. We have no clue to it from the age, the sex, temperament, or habits. Anterior or concomitant disease foreign to syphilis, or the special remedies employed by the patient, give none. So far, then, we have nothing to fall back upon but the universal cause, idiosyncrasy. We find in certain individuals that a first chancre does not become indurated, whilst the second does, and that those contracted afterwards do not. What, then, is the mysterious cause? One of the reasons of these differences has passed unperceived up to the present time. "Let us then seek it in the laws so general and so uniform in virulent diseases. Let us look for it in the striking analogies which exist between small-pox, cow-pock, and true pox. For example, the cow-pock may fail the first time. This arises from a want of aptitude in the constitution to receive it, of the cause of which we are ignorant; but should it happen to succeed, the consequent unsuccess of a new vaccination is explained. The effect of the first vaccination is not as yet exhausted. Modern observation has proved that a certain space of time is necessary to elapse before the constitution is again susceptible."

Here, then, is the fact that long experience has taught our author, and which has also been observed by M. Puche and Diday; and from which he deduces this *general rule—a patient who has the first time an indurated chancre, never has a second.* As in small-pox and cow-pock, it is probable that this law may have exceptions; and it is even desirable it should, for such being the case, we may yet arrive at the destruction of the syphilitic diathesis. But beyond doubt these exceptions are of rare occurrence.

Where there is indurated chancre, there must of necessity be

constitutional syphilis. With induration the syphilitic disposition, as Hunter calls it, is acquired. There is, therefore, a diathesis, a special, peculiar disposition, in virtue of which ulterior conditions are produced—a disposition, temperament, or diathesis, that cannot be doubled or tripled no more than an analogous disposition for cow-pock. The indurated chancre is to syphilis what the true variolous pustule is to small-pox, what the true vaccine pustule is to cow-pock. Unindurated chancre is the pseudo-pustule; it is a false vaccination.

The principal character of this ulcer being induration, at what period of its existence does this condition set in? The answer to this question is important; for the moment the change has taken place the disease is no longer local. But it is not always easy to determine this, as patients do not in general present themselves for some time after contagion. This want of attention on their part may, in the majority of cases, be accounted for by the indolence of this form of chancre, its progress being slow, and suppurating but little, they do not perceive it till late, or it even escapes their attention, and so may be explained the doctrine of those who believe in a *primary* constitutional syphilis. With the nearest approach to certainty which facts afford, it may be said that induration is never manifested sooner than the third day; always within the first or second week, and if it does not take place within three weeks, the chancre will not become indurated, certain conditions may deceive us, and lead us to believe in induration occurring at a later period. Let us then examine what they are.

"It is not always easy to recognise specific induration, whether it be the effect of contagion acquired in the ordinary manner or of artificial inoculation, the infected part being surrounded by common inflammation, in which the specific induration is masked for a certain time; and it is only as the simple swelling, œdematous, subphlegmonous, or phlegmonous inflammation disappears that we are able, as it were, to exhume the specific induration, and it is thus the error has arisen of induration being supposed to occur at late periods after infection.

"Certain local applications, as caustics, sometimes give rise to a factitious induration, which may be produced at various periods, and which may deceive. These factitious indurations may even complicate the specific, and render them liable to be mistaken. It has been urged, that you may produce an ulcer exactly resembling a Hunterian chancre, by the application of corrosive sublimate,—no doubt resembling it, but not identical. Solution of corrosive sublimate, of chromate, of potash, or of acetate of lead, may give rise to symptoms so analogous to in-

durated chancre, that surgeons unskilled in observation may mistake them, and hence has arisen the belief that indurated chancre is not necessarily followed by constitutional symptoms. There is also another cause of error into which some have fallen, viz., mistaking a second or new chancre, contracted upon the induration left by the first, for an indurated chancre."

Some believe that all primary symptoms may be followed by secondary affections; and if there be one more privileged than another, that it is blennorrhagia. It must also be recollected, that an indurated chancre may become phagedenic; and if the disease was not seen at the commencement, it might be believed that secondary symptoms followed on a phagedenic ulcer without induration. Again, induration is not always well developed; it is sometimes superficial, and it requires some skill to be able to discover it on the skin or mucous membrane. It sometimes, too, only gives the sensation of a fold of parchment. The induration generally extends to the entire base of the ulceration; but in some rare cases it extends only to the edges, and is then annular. "When there is no complication the induration ends abruptly, and is raised above the neighbouring healthy parts, constituting then a variety of the *ulcus elevatum*." We must, here, however, inform M. Ricord, that this is not the nature of the ulcer described by English writers as the *ulcus elevatum*.

Induration presents itself sometimes under the appearance of a crust, when the plastic infiltration to which it is due does not take place in homogeneous tissues, and, therefore, experiences a greater resistance in some points than in others. Induration is generally developed slowly and gradually; sometimes irregularly; so that at first it is but slight, remaining stationary for a considerable space of time, and then increasing rapidly. Again, after having been greatly diminished, or even having disappeared, it is very liable to be regenerated; and, under these circumstances, it is by no means rare to see it more extended than at first.

The length of time that induration may exist is not limited to any fixed period. In some cases it may entirely disappear in a month, whilst in others it may exist for months, or even for years. At the base of the glans the induration is extremely well marked, and also remains for a considerable period. On the glans itself, the neck of the uterus, and the annular orifice of the vulva, it is often but little developed, and difficult to discover. In the urethra, especially in women, it is very ephemeral. In the anus and vagina, much care is required to guard against mistake. Upon the tongue and lips it sometimes re-

mains for a considerable period. In all cases the ulceration has been long healed before the induration begins to disappear.

The indurated ulcer is generally single, and its ulcerative or specific stage is soon limited spontaneously or by the interference of art. Sometimes, however, it spreads considerably, and becomes excavated; and looking at it gives the idea that there had been great loss of substance. When cicatrization takes place, scarcely any trace remains, the plastic exudation having defended the neighbouring tissues. This circumstance is of considerable importance, for it is not the most numerous or deepest-formed cicatrices which are followed by constitutional contamination. Induration, then, is the certain proof of the constitution being infected. It is the passage from the primary to the secondary stage. In fine, indurated chancre is that variety which most quickly loses the principal characteristic of primitive sore, viz., the power of furnishing an inoculable pus. It may also be regarded as an indication for treatment, for it is one of those symptoms which most readily yield to mercurials. There are circumstances under which, however, the induration resists. It is then most frequently not a specific induration that we have to treat, but an organised tissue which succeeds it.

"Specific induration is, anatomically speaking, situated in the skin and mucous membranes, the subcutaneous, and submucous tissues. But it would appear that it has an especial predilection for the lymphatic capillaries, as, where they are best marked, there do we find it most developed. The microscope has not as yet discovered any peculiarity of its essence or intimate nature."

M. Ricord next brings under consideration the manner of cicatrization of chancres. The only point in his observations on this head that we shall notice is, that after a chancre has infected the constitution, it may itself undergo a transformation, and finish by becoming a mucous pustule, thus confirming the fact noticed by some who, however, from the want of analysis, have not recognised this change, and have admitted that these symptoms may be either primitive or secondary, and that under all circumstances they are contagious; a view denied by our author.

The following he especially insists upon, namely, that although a chancre may have had repeated attacks of ulceration during its existence, *once cicatrized, it never returns.* If after complete cicatrization a fresh chancre should appear furnishing pus which is capable of inoculation, it may be affirmed that it is the result of a fresh contagion. Mercury, regarded by some

as the touchstone, and especially, as the author remarks, in England, where its effects are used as the foundation of the division into true and pseudo-syphilis, is often found to be deceptive, curing those ulcerations which are not syphilitic, and aggravating those that are. Having found how impossible it is to come at a true history of each case, and how much, in consequence, the difficulty of the diagnosis is increased, M. Ricord lays it down as a rule, but one contrary to the opinions of many, that the sole, positive, unequivocal, and pathognomonic symptom of chancre, during its period of progression or of *specific statu quo, is to be found only in the pus which it secretes, and in its capability of being inoculated.*

But here, with the twenty-first Letter, we must stop for the present, as we are anxious to complete our analysis in as full a manner as that which we have hitherto followed. We shall continue and conclude it in our next Number.

Principles of Physiology, General and Comparative. With 321 Wood Engravings. By WILLIAM B. CARPENTER, M. D., F.R.S., &c. Third Edition. London: Churchill. 1851. 8vo, pp. 1098.

A Manual of Physiology ; including Physiological Anatomy. By WILLIAM B. CARPENTER, M. D., &c. Second Edition. With 190 Illustrations. London: Churchill. 1851. Foolscap, 8vo, pp. 616.

How many noble examples see we in the medical profession of men who devote a life to patient toil and unceasing labour in investigating the intricacies of our art, with the view of illustrating matters previously obscure, or of throwing additional light on those already partially understood. There is, it must be admitted, an innate spiriting in the mind of man which carries him onwards through any work he may have embarked in, careless of the results as regards present or future pecuniary advantage to himself, anxious alone to arrive at knowledge. Love of fame, some call this; some, ambition. But we believe that either, although often more or less an incentive, is, in respect of the literary labours of the physician, altogether insufficient to stimulate to the exertions which we daily witness, and with proofs of which the history of medicine abounds. There is truly an ennobling feeling in the practice of our "godlike art," at least to him "who practiseth it aright;" and to its effect we would rather ascribe the "morn of toil and

night of waking," which are the chosen lot of so many of its professors.

In our own times, Dr. Carpenter affords an illustration of how much one man can do for the advancement of knowledge in his own department. An unwearied writer, a successful author, a laborious investigator—his works have done much to place medicine in the scientific position which the opening of the second half of the nineteenth century finds her occupying. His inquiries have been applied chiefly, as the titles of his works, which we are now noticing, show, to a special, but probably the most important branch of pathology, one on which a correct system of therapeutics must be based. But he has also, in the important editorial position which he has now for some years occupied, been enabled to influence, by precept and by example, the cultivation of the medical sciences generally.

The new editions of two of his works, which are now before us, bear evident marks of his constant application and careful habits; but the General and Comparative Physiology, of which this is a third edition, especially deserves our commendation. Without pretending to it, it is an Encyclopædia of the subject, accurate and complete in all respects—a truthful reflection of the advanced state at which the science has now arrived. As the author remarks: "The discoveries in which the physiological researches of recent times have been so fertile," have rendered the present volume a new work: "since, out of 1080 pages, of which it consists, not above 150, or less than one-seventh, belong to the previous edition."

The following extract from the Preface, which we feel bound to lay before our readers, is a truthful illustration of the few remarks with which we commenced this necessarily brief notice:—

> "The whole of the author's disposable time has been devoted to the present work for nearly two years, not merely without the anticipation of the slightest pecuniary reward, but under the certain loss involved in the relinquishment of other literary engagements of a remunerative character; and the sale of the entire edition will not do more than remunerate his liberal publisher for the very large outlay which has been incurred in the production of the work, and more especially for the beautiful series of illustrations with which it is embellished, most of them having been executed expressly for it by Mr. Bagg."

To Mr. Churchill, perhaps the most extensive medical publisher in the world, we have often expressed the obligation which the profession is under, for the getting out of his books;

and we do not think that any superior to the present has ever issued from his press; we, therefore, fully accord with the above remark respecting him. For Dr. Carpenter we feel assured that he has his own reward, and that he needs not our praise to urge him onward in his useful career. "The monuments of wit and learning are more durable than the monuments of power or of the hands, and the images of men's wits and knowledge remain in books, exempted from the wrong of time, and capable of perpetual renovation. Neither are they fitly to be called images, because they generate still, and cast their seeds in the minds of others, provoking and causing infinite actions and opinions in succeeding generations. So that, if the invention of the ship was thought so noble, which carrieth riches and commodities from place to place, and consociateth the most remote regions in participation of their fruits —how much more are letters to be magnified, which, as ships pass through the vast seas of time, and make ages so distant to participate of the wisdom, illuminations, and inventions, the one of the other?"[a]

On the Pathological Anatomy of Bronchitis, and the Diseases of the Lung connected with Bronchial Obstruction. By W. T. Gairdner, M. D., Pathologist to the Royal Infirmary of Edinburgh. Edinburgh: Sutherland and Knox. 1850. 8vo, pp. 82.

The opportunities enjoyed by Dr. Gairdner since his appointment to the office of Pathologist to the Royal Infirmary of Edinburgh have been most industriously and assiduously employed; and the many interesting contributions to medical literature, especially in its pathological departments, which have been already made by this zealous observer, prove him to be, in every way, the worthy follower of his predecessors, Home, Reid, and Bennett.

The addition to the staff of a large clinical hospital of a distinct officer, to whom the care of conducting the pathological examination of each fatal case is intrusted, is the recognition of a great practical want, which cannot but be felt by all who are acquainted with the absorbing duties of a clinical teacher, and the fatiguing routine imposed on him by the service of even a limited number of medical or surgical wards. Indeed we have no hesitation in stating our clear and de-

[a] Bacon's Advancement of Learning.

cided conviction, that the double duty of clinical investigation and accurate *post mortem* examination of important cases cannot be performed by the same individual, in anything approaching to an efficient manner, or in a way at all consistent with the strict requirements of scientific research. We have on former occasions forcibly called attention to this great want in the medical arrangements of our Dublin Hospitals; and we take this opportunity of doing so again, hoping that ere long an effort may be made to fill this deficiency, and knowing, as we do, that there are hands and hearts able and willing to undertake such important duties, and anxiously desirous to give their best energies to such an interesting sphere of action.

The researches of Dr. Gairdner, which now appear in the form of a separate *brochure*, originally laid before the Medico-Chirurgical Society of Edinburgh, were subsequently communicated to the Monthly Journal of Medical Science, in whose pages, no doubt, many of our readers have already become familiar with the views of this pathologist. It is only in this collected form, however, that we now become entitled to bring them under critical notice. The field which our author has chosen for his investigations is one that has been already trodden by many labourers of distinction since the time of Laennec; nevertheless, we find that his industry has been rewarded by the discovery of some interesting, and, in a measure, novel pathological facts.

The several phenomena of partial, temporary, and permanent obstruction of the bronchi have been made familiar to us by more than one observer; but it is in relation to the direct connexion of these conditions with *collapse of the pulmonary texture*, that Dr. Gairdner brings the subject now before us. His attention appears to have been directed more especially to this morbid condition during the Edinburgh fever epidemic of 1847, when it was frequently observed,

> "That the lungs in persons of all ages were the seat of a form of condensation, characterized by the absence of the friability and granular appearance on section, of pneumonic consolidation, and also by the peculiarity of the microscopic elements, the large granular cells which form so common an ingredient in ordinary red hepatization being either very sparingly or not at all present. The condensed portions were usually scattered over both lungs, and often very limited in extent, being accurately circumscribed by the margins of the lobules."

A remarkable case occurring some time after, in which *bronchial obstruction and collapse of the pulmonary air-cells were*

found co-existent, both lesions being limited to a very small and circumscribed space in the lung, appears, naturally enough, to have suggested the relation of these two conditions to each other as cause and effect, and to have led to the prosecution of further researches, for the purpose of solving this important problem[a]. Our author distinguishes two forms of bronchitic collapse, the diffused and the lobular. The latter condition is that which has been so frequently described under the name of lobular pneumonia (an error shared, it appears, by MM. Barthez and Rilliet); but the results of inflation, as shown in the experiments of Bailly and Legendre, prove its real nature, and sufficiently distinguish it from that inflammatory condition, exhibiting at the same time its greater pathological affinity to the *atalektasis* of Jöerg. The reader will find in Dr. Gairdner's essay a tolerably extensive historical and critical notice of the several writers who have treated of this subject, together with a number of cases from the Register of the Royal Infirmary, all of which will well repay perusal.

Under the head of the *mechanical effects of obstruction*, we find some interesting and ingenious observations in reference to the theory of the causation of emphysema propounded by Laennec, and which has received such general and almost unqualified adhesion from the majority of subsequent writers. This theory, which refers the pulmonary dilatation to an accumulation of air behind an obstruction of a bronchial tube, rests on grounds now known to be false. Thus, it was taken for granted that the expiratory muscles possessed much less force than the inspiratory, while the experiments of Hutchinson and Mendelsohn have established that the forced or muscular expiratory act is about one-third more powerful, as measured by a pressure gauge, than the extreme force of inspiration[b]. The data of Laennec's hypothesis being thus shown to be quite erroneous, the theory falls to the ground. The experiments of Mendelsohn and Traube, in which leaden shot and pellets of paper were forced into the bronchi, and which resulted in these tubes being found after death red and void of air, show, on the contrary, that an obstructed bronchus leads rather to the condition of collapse than to that of emphysema. Dr. Gaird-

[a] Dr. Gairdner states, that at the time his first observations were made, he was unacquainted with the remarks of Dr. West. The literature of this subject is now pretty extensive: the latest writer cited by Dr. Gairdner is Dr. Caspar Friederich Fuchs, who has published an essay entitled "Die Bronchitis der Kinder," Leipzig, 1849.

[b] See Dr. Reid on Respiration, Cyclopædia of Anatomy and Physiology, part xxxii. p. 336.

ner advances here an ingenious explanation, by which he makes it evident that we should expect to find, as the result of the respiratory movement, an absence instead of an accumulation of air behind even a moveable obstruction, such as a pellet of mucus.

Thus, each expiration, if capable of slightly displacing the plug, expels a small quantity of the air situated behind the point of obstruction, while the inspiratory movement can only have the effect of restoring the plug to its former position (or, should it be of soft consistence, of even forcing it still further into the tube). A small quantity of air being thus expelled at each movement of expiration, while none is admitted, in consequence of the valve-like action of the plug, it may be easily understood how a repetition of the process will end in complete collapse of all the pulmonary tissue in connexion with the obstructed bronchus.

The entire of Dr. Gairdner's observations on bronchitic collapse, and its connexion with bronchial obstruction, well merit attention; we feel satisfied that in the hasty and superficial examination usually made of the thoracic organs in ordinary *post mortem* sections, this condition is frequently overlooked, or, in its more diffused forms, only too often confounded with other pathological lesions. And yet the interest attaching to this subject does not relate merely to questions of scientific accuracy. We can readily conceive cases in which the decision of important medico-legal questions would rest on the diagnosis of particular lesions found *post mortem*, and the interpretation to be put on them as to their nature and cause. Dr. Gairdner contrasts the appearances presented by pneumonic consolidations and bronchitic collapse. In the more marked examples of either condition there can be but little liability to error, but we apprehend that certain forms of pulmonary congestion, which it is difficult to reduce to any particular type of lesion, are much more capable of being confounded with bronchitic collapse. The first stage (Laennec's) of pneumonic inflammation may also, no doubt, be simulated by certain forms of bronchitic collapse; in all these cases we can recommend, with our author, an appeal to the microscope as the safest guide when taken in connexion with what can be gained from history and general characters. As we have before observed, too much accuracy and attention cannot be bestowed on the diagnosis of these lesions; our decisions may, in certain cases, involve the crimination of parties accused before a court of justice, or, on the other hand, enable us to dispel apparently well-

founded suspicions against the accused; a case which recently came under our own observation very fully illustrates the difficulties and importance of these inquiries.

Of the pulmonary lesions connected with bronchial obstruction, some are permanent and others only temporary. The following propositions exhibit, in the manner of a summary, the results of Dr. Gairdner's experience and observations with regard to the latter:

"Firstly, That pulmonary collapse from bronchitis, when recent and uncomplicated, appears to be susceptible of cure, on removal of the bronchial obstruction. Secondly, That this is usually effected not so much by the agency of respiration, as by the muscular contractions of the obstructed bronchi themselves. Thirdly, That the derangement or paralysis of this de-obstruent function becomes a cause of bronchial accumulation even in the normal state of the mucous membrane, and *a fortiori*, in cases of bronchitis. Fourthly, That the de-obstruent function of the bronchial tubes may be impaired by various causes acting on the pneumogastric nerves, either directly or through the nervous centres; and, fifthly, that it may be stimulated by remedies or other agents acting in a similar manner."

Though the researches of Reynaud had made the various morbid conditions of the bronchi sufficiently familiar to all interested in thoracic pathology, Dr. Gairdner has unquestionably the merit of establishing, in a clear and unequivocal manner, the precise and direct relation between obliteration of these tubes and the changes in the pulmonary texture just described, and we cannot but feel that in thus giving a defined pathological position to the condition of pulmonary collapse as to its causation and clinical history, he has conferred much benefit on our science. But it is not alone as an independent affection that pulmonary collapse is entitled to our consideration. Though, as we have seen, the recent and uncomplicated forms admit of cure, the lung being restored to its normal conditions, the persistence of this lesion leads, in the opinion of our author, to further and extensive structural changes in the respiratory organs. Under the head of *permanent lesions of the bronchi and air-vesicles depending on bronchitis*, we find a very large share of this memoir devoted to the study of *the relation of bronchitic collapse to pulmonary emphysema*—a relation which, as we shall see, Dr. Gairdner endeavours to establish, not as occasional or accidental, but as invariable and necessary, thereby placing the two lesions in the position of cause and effect.

Passing over the details of forty cases of emphysema, ex-

hibiting in a tabular view the relations of this lesion to other affections of the lungs, we present our readers with Dr. Gairdner's statistical summary:

"The following table exhibits, in one view, the per-centage of most of the lesions referred to above in emphysematous and in mixed cases of disease, the numbers from which it is calculated being derived from the same hospital returns, so as to assimilate the conditions of observation as nearly as possible:

	In Mixed Cases.	In Emphysematous Cases.
Hepatization, ...	9·8 per cent.	10·0 per cent.
Tubercle, ...	20·0 „	20·0 „
Condensation (collapse),	11·8 „	67·6 „
Bronchial abscesses, . .	5·5 „	17·5 „
Induration and atrophy,	7·5 „	25·0 „
Concretions, ...	4·1 „	20·0 „

"It will be seen that while the first two lesions in the preceding table appear to have no special numerical relation whatever to emphysema, their per-centage being nearly the same in this affection as in the general returns, the remaining four are found to be greatly more frequent in connexion with emphysema than under other circumstances. But this is not all; for as tubercle is almost invariably connected with some form of condensation, and was so connected in many of the cases here referred to, and as all the cases of hepatization are also to be found under the head of bronchitic condensation, it becomes nearly certain that of the whole forty cases of emphysema not one had any direct connexion with either hepatization or tubercle as such, but only through the medium of the other lesions mentioned. Tubercle and hepatization, therefore, are, in all probability, merely the accidents, and not either the cause or effect of emphysema of the lungs."

These results satisfy Dr. Gairdner as to the all but invariable connexion between emphysema and one or other of the four remaining lesions represented in the table, amongst which *collapse* is particularly conspicuous by the high figure which represents its occurrence in existence with emphysema.

Our author next proceeds to the consideration of the mechanism by which emphysema is produced. After glancing again at the opinions of Laennec, he devotes some paragraphs to the inspiration theory, known, no doubt, to many of our readers, and developed in the work of Dr. Williams. Emphysema is, according to this theory, "*a complementary* lesion dependent upon the previous existence of some form of occlusion of the vesicles, and invading the remaining sound portions of the lung." With the general truth of this proposition Dr. Gairdner expresses himself satisfied, but considers "that there is yet

another condition necessary besides mere occlusion of the air-vesicles in a part of the lung, this is, *partially diminished bulk:* in other words, collapse or permanent atrophy of a portion of the lung."

The succeeding pages are occupied with some extremely ingenious arguments advanced by Dr. Gairdner, in support of this proposition, and illustrated by plans and diagrams of the relations of the pulmonic lobules to each other. These arguments are, we admit, put forward with great ability, and we doubt not that the explanations they develop will be found capable of a very general application; but having given the subject a very close investigation, we are not prepared to grant that *diminished bulk* constitutes an indispensable condition to the production of emphysema. The following passage exhibits Dr. Gairdner's main argument :

> " Suppose that in the accompanying figure" (a parallelogram divided into three equal spaces) "the three equal partitions represent the *maximum* air space in the normal condition of full inspiration of three lobes or portions of a lung (represented equal for the sake of simplicity); each lobe holds, on full inspiration, twelve cubic inches or other measures of air; and it is adapted normally to hold this quantity without pressure on the capillary circulation, or risk of violence to the texture of the organ. It is at once obvious that no amount of lesion which leaves the upper partition or lobe" (or any of the lobes) " of its normal volume can at all affect the maximum expansion of the other two."

He then proceeds to show how pulmonary collapse fulfils the necessary condition, of not only obliterating a lobule, but also of decreasing its bulk, and thus allowing of the distention of the neighbouring lobule to fill its place, giving rise in part to an emphysematous dilatation of the lobule in the immediate neighbourhood of the collapsed portion of pulmonary tissue. We by no means wish to be understood as doubting the value of this explanation, on the contrary, we think it adequate and satisfactory, but we only object to its exclusive adoption. If we confine our consideration to one particular lobe, lobule, or set of vesicles in connexion with a *single* bronchial tube, the observation of Dr. Gairdner as to the impossibility of mere obliteration of the cavity of one lobule or vesicle not affecting the size of that in its neighbourhood would be perfectly just. But, as we shall endeavour to show, the obliteration of a lobule or vesicle influences not only those fed by its bronchial twig, but also those in its neighbourhood which receive their supply of air from a different tube, or another branch of the same tube, *in con-*

sequence of the balance in the distribution of air on the vesicular surfaces being disturbed by the occlusion of a vesicle or set of vesicles. Thus, let us suppose a bronchial tree to fork, throwing a branch to each of two small lobules; and, for simplicity sake, let us further suppose that each of these lobules contains only two subdivisions or vesicles, the parietes of any two, or of all of them, being in contact. Let one of the bronchial twigs be a, the other b, let the vesicles of a be called v, and the vesicles of b be called v'. Let V be the volume of air passing through each of the bronchial twigs a and b, and f the inspiratory force of this column of air. Now $\frac{Vf}{2}$ represents the distending force exercised on the surface of each of the vesicles under the normal condition, their expansion is, consequently, equable and uniform. Let us suppose, however, that under certain diseased conditions the cavity of one of the vesicles of v', in connexion with the bronchial twig b, becomes filled with any deposit, but undergoes no diminution in volume, we shall now find that the distribution of the inspiratory force on the surface of the remaining vesicles ceases to be equable and uniform. For as Vf represented the distending force of the column of air in the tube b, which becomes $\frac{Vf}{2}$ for each vesicle of v', when one of the latter becomes no longer permeable to air, the entire force, or Vf, is thrown on the surface of the remaining vesicle of v',—now each vesicle of v, in its immediate neighbourhood, is still acted on only by half this amount of distending force, or $\frac{Vf}{2}$. It is easy to conceive, therefore, that v' will undergo distention at the expense of v: in other words, an emphysematous condition of the former is produced. This argument will hold good manifestly as well for lobules as vesicles, and if we suppose a general operation of this force throughout the lung, or any considerable portion of it, we can easily conceive that emphysema may be produced without diminution in bulk of any part of the pulmonary texture. We freely grant, however, that this condition will be much more readily produced when the lobules of any portion of the organ have undergone collapse.

In conclusion, we have only to add, that we can confidently recommend this memoir as well worthy of perusal to all interested in the pathology of these lesions of the respiratory organs, and to the talented author, who has already given such admirable promise, we wish to offer every encouragement to pursue the path of original inquiry he has struck out for himself.

On the Transmission from Parent to Offspring of some Forms of Disease, and of Morbid Taints and Tendencies. By James Whitehead, M. D., F. R. C. S., &c. London: Churchill, 1851. 8vo, pp. 351.

There are few subjects more interesting or more difficult to explain than the hereditary transmission of disease. Interesting it must be to all, for who can feel sure of not transmitting a heritage of constitutional peculiarities to his children, which may interfere with their comfort or health, and perhaps influence the duration of their life. Add to this that a large portion of our race are further injured, not by the transmission of constitutional weaknesses, but of acquired diseases or the effects of such, and the matter becomes of immense importance. The health, wealth, usefulness, and entire well-being, not of the present generation, but of those succeeding, are involved in the question, and any researches which throw even a little light upon so obscure a subject must be welcomed by the profession. On this ground we were at once disposed to look favourably upon the volume before us, coming as it does from a gentleman whose former publication proved him to be a careful and painstaking observer. Nor has a perusal of the work itself changed our feelings. It is true that the first part, which treats of the doctrine of hereditary transmission, adds but little to our knowledge of its laws, but in the subsequent chapters the author examines pretty fully the question of transmitted syphilis, and to these chapters our attention will be limited.

Passing over the first chapter, therefore, we find that the second consists of a collection of cases which form the groundwork of the subsequent portion of the volume. Whilst admitting the value of this collection, we feel bound to say, that our impression regarding some of the cases has been, that they were somewhat deficient in characteristic marks of syphilis; the author seems to us rather lightly to conclude diseases to be venereal, and, as is common with men who devote themselves to a favourite subject of study, he is inclined to attribute more diseases than we should be prepared to admit to a syphilitic origin. For example, an individual may have a constitutional tendency to tubercular or malignant development, and either may occur in a patient reduced by venereal taint, yet it would not be logical or true to state that syphilis is the cause of tubercle or cancer.

These cases Mr. Whitehead conceives will justify the fol-

lowing conclusions, and, with some reservations, we are inclined to agree with him:

"1. That the venereal poison, once introduced into the human body, into the circulation, is liable to remain in the system for an indefinite period, and although there be no outward sign to indicate its presence, that it is nevertheless liable, under favouring circumstances, to re-appear, and develop itself in various forms of secondary phenomena, known as lues venerea.

"2. That lues venerea, whether latent or manifest, is capable of being communicated from person to person, and that the poison thus received by one 'at second hand' may be thence conveyed to a third, from the third to a fourth, and probably much further.

"3. That the mode of contamination is commonly through the medium of the genital organs; but, as a disease of the blood, it may be conveyed through any other channel by which certain of the secretions, or perhaps the blood of an infected person, are admitted into the circulating current of another: as by the mouth, the nipple, an abraded surface, by vaccination, or through the current of maternal blood destined to nourish the child in the womb.

"4. That a woman who has been thus infected, although no visible sign of her actual condition be manifest in the outer surface of the body, yet does she, in perhaps nine cases out of ten, bear specific evidence of its presence in her own person; and this evidence is to be found precisely in the part where a knowledge of the laws of organic function would lead one to look for it. The establishment of this fact leads inferentially to the suspicion that the genital secretions in man may continue to be charged with poisonous matter for a long time after the disease itself appears to have been cured. The extreme susceptibility to excoriation of the glans and præputium penis which is generally noticed in tainted persons, and which in itself constitutes a suspicious symptom, materially strengthens this supposition."

These opinions, in some important respects, as the reader will perceive, are in direct opposition to those of John Hunter, and more recently, of Ricord in France, and Mr. Acton and others in England, but are confirmed by the experience of Mr. Hey of Leeds, Mr. Colles of Dublin, Cazenave of Paris, and others.

We shall notice very briefly the arguments and observations adduced by the author in support of these positions.

With regard to the first we quite agree with Mr. Whitehead, that it is very difficult, if not impossible, to decide in what length of time after infection the system can be said to be quite free from venereal taint. That much too limited a period is often fixed is shown by daily experience, but whether we can fairly assume the author's cases as accurate measures of its du-

ration we are not quite prepared to say. For example, in one case the patient had primary syphilis, and was apparently cured. Fifteen years afterwards, when pregnant by a second husband, who did not appear to have had venereal, secondary symptoms showed themselves in the woman, and her child died with venereal symptoms. In another case the morbid poison was active at the end of six years; in a third, after fourteen years; in a fourth, after nine years, &c. Certainly these examples of prolonged syphilitic influence are supported by the authority of M. Cazenave, one of the first syphilographers of the present day.

With regard to the communicability of secondary syphilis, Mr. Whitehead is opposed to the views of Hunter, which, as our readers have seen in a previous review in our present Number, are so ably supported by Ricord, and adduces additional evidence to that brought forward by Mr. Hey, Dr. Colles, Cazenave, and others, in opposition to his opinions. Thus, in Cases I. II. and V. of the work before us, the husbands had suffered from primary syphilis, and had been apparently cured some time before marriage, and yet not only their wives were diseased, but the infants also. Case XXI. was one of secondary inoculation, as the wife never experienced primary symptoms. Moreover, the disease stole upon her in the slow, insidious manner which is characteristic of secondary infection. Nevertheless, the disease was of a very destructive character, having eaten away a portion of the nose and the whole of the soft palate, and destroyed all her children.

In another case:

"A young wife, in her twenty-fifth year, having been married upwards of four years, came under my notice in September, 1850, complaining of decayed general health. She had had five pregnancies, of which the first ended at seven and a half months; the second, at three months; the third, at seven and a half; the fourth, at eight and a half; and the fifth at eight and a quarter, all stillborn, and in a state of decay."

An examination of the uterus revealed a condition which Mr. Whitehead considers characteristic, and to which we shall refer by and by. This led to inquiry of the husband, who, it appeared,—

"Had never suffered from either venereal disease or gonorrhœa in the primary form. He frankly confessed, however, that he had incurred the risk of infection some months before marriage. A few weeks after the occurrence alluded to by him, he had an ulcer on the lower lip, near the right angle of the mouth; it was broad and

deep, and the surrounding parts were extensively inflamed, hard, and painful. The sore proved refractory, and, on being shown to a late eminent surgeon, it was pronounced venereal, and prescribed for accordingly."

Other cases are given by Mr. Whitehead, but it is sufficient to quote these as illustrative of the kind of evidence which he adduces, and to which, indeed, most British surgeons of the present day could add from their own observations; yet how difficult it is to come to a decided conclusion on the matter is evident from the observations of Ricord, to which we have already alluded.

Let us now pass on to consider the various modes of infection. The author first adduces a number of cases in which little or no disease could be discovered in husbands, and who nevertheless infected their wives; and he observes that—

"Cases of the above description, of which a considerable number have fallen under my own notice, supported as they are by a mass of evidence instituted by men of unquestionable integrity and great experience, if not sufficient to warrant the conclusion, afford at least strong grounds for suspecting, that the syphilitic poison may continue to exist, as a blood disease, for an indefinite period after all actual traces of its presence have disappeared from the system, and that the taint is frequently conveyed under such circumstances through the medium of the *sexual* organs."

Abundant cases from high authorities, in addition to his own, are quoted, to show that a child may give the disease to its wet nurse, or receive it from her. We should have thought this evidence unnecessary, were it not for the writings of Ricord and Acton, for surely every practitioner must have met with such. Mr. Whitehead gives six cases, of which "five were from the mother to the infant, in some of whom was the nipple excoriated, and one from the infant to the mother."

"In Case XII. the mother contracted primary syphilis from her husband, six weeks after delivery. All her previous children were healthy. The infant, also in health up to the date of its mother's accident, was covered with secondary syphilitic eruptions and other symptoms, at three months old, several weeks before any secondary indications manifested themselves in the mother."

The infant that communicated the disease to its mother acquired it, in Mr. Whitehead's opinion, by vaccination:—

"The infant, full-grown and healthy at birth, continued in a thriving and vigorous condition until vaccination was performed, at about the age of three months. The symptoms which followed

were undoubtedly syphilitic, both in the infant and its mother, to whom the disease was directly continued through the medium of the breast; and it was satisfactorily ascertained that the child from whom the vaccine lymph was derived, as well as its mother, had previously laboured under lues venerea."

So far as one case goes, this is of great value, but we need hardly say that many more would be required to establish the point. It would be very desirable that some method of testing the question to an ample extent should be adopted, with sufficient precautions against error.

Again, the disease may be communicated by contact with an abraded surface, as has repeatedly occurred to accoucheurs and midwives, and of which Mr. Whitehead gives two cases. M. Cazenave mentions one case, and Mr. Whitehead another, in which the virus produced its characteristic effects on being brought into contact with an unbroken cutaneous surface. We ourselves knew a case in which a medical man acquired the disease by examination of syphilitic patients, and who communicated it to persons whom he attended during labour.

Cases are on record by Cullerier, Biett, and Cazenave, to which Mr. Whitehead has added some, which prove beyond all reasonable doubt that the disease may be communicated by contact of the lips with those of an infected person.

After examining these points, Mr. Whitehead proceeds to refute M. Ricord's doctrine of the non-communicability of secondary and tertiary symptoms to the infant, and of the infant *in utero* not being affected by disease acquired by the father after its conception. He remarks:

"My experience leads me to believe that syphilis in the secondary, as well as in the tertiary form, can be conveyed from father to mother, and from the latter to the offspring, without any necessary outward manifestation whatever of its presence in either one or the other. That the non-existence of the disease in the mother has generally been believed in cases where it has appeared in the offspring, is owing, in my opinion, to an oversight committed in neglecting to examine the uterus in such cases; for in almost every instance examined by me, characteristic disease of this organ was evident whenever there was reason to suspect it in the offspring, although no evidence whatever of its presence existed outwardly in the parent."

Before, however, proceeding to the consideration of this important point, we must first notice that Mr. Whitehead rightly maintains, contrary to the opinion of Trousseau and Lassaigne, that the infant may exhibit syphilitic eruptions on the skin at birth, though they more commonly make their appearance a week or two afterwards. We cannot deny that the desquama-

tion and discoloration of the skin in many syphilitic still-born children may be owing to cutaneous syphilitic eruptions, as we occasionally find an analogous condition in those still-born children who die shortly before delivery, without time for putrefactive action, as Mr. Whitehead observes; but we are bound to state, that the distinction between the syphilitic infant and the putrid one, non-syphilitic, is extremely difficult to be made, and in many cases impossible, from appearance alone. Practically, none should pronounce upon the presence of a venereal taint from the aspect of the fœtus alone.

The most common symptom in women suffering under the disease is leucorrhœa.

"But the stain (on the linen) in venereal affections is different from that communicated by the product of simple or inflammatory action, though in what the difference consists, chemically considered, we do not exactly know. In venereal affections the colour alluded to has a greenish tint, and is often very difficult to remove from the linen by washing."

But it is upon the condition of the uterus that Mr. Whitehead lays most stress, and of which he claims to be the original observer. He speaks of these symptoms also as "constant and altogether peculiar."

"They may be reduced," he says, "to the following forms:—1st. Hypertrophy, affecting the lower section merely, or extending upward to the body, or even involving the whole organ. 2nd. Induration, existing circularly or partially, or extending in some directions as far as the touch can ascertain the condition. 3rd. Erythema, presenting an even surface of a dark red, glistening aspect, or being interspersed with a number of white elevations, usually denominated follicular enlargements. 4th. Excoriation; the cuticle, when the parts happen to be viewed at an early period, being broken in such a manner as to present an appearance as though the subjacent structure had increased to a dimension beyond the capacity of its cuticular envelope, which seems as if it had burst from over-distention. 5th. Aphthous ulceration. 6th. Endo-metritis, inflammation and ulceration of the inner surface of the uterus, terminating externally, when it is sometimes seen to surround the orifice, at other times implicating but one labium, and limited outwardly by a defined margin. 7th. Warty excrescences."

Now we do not for a moment deny that any or all of these changes may accompany venereal disease; but the real question is, whether these changes are characteristic of syphilis, and are not observed when the patient is free from the taint. If the answer be affirmative, then we have acquired a most valuable sign of the disease even in cases where there are no

external symptoms. Our own opinion, however, is that these appearances are not peculiar to a syphilitic patient, but that they occur under circumstances to which no suspicion attaches.

The first and second changes Mr. Whitehead admits to be "by no means peculiar to syphilitic affections," we therefore may dismiss them. The erythematous redness, however, he thinks pretty certainly indicative of the syphilitic taint, but we can assure him that we have repeatedly seen cases answering to his description to which no suspicion could attach, and in which no consequences to the offspring followed. After all the discussions lately about excoriation, we think we need hardly deny that they are pathognomonic. You may have syphilitic excoriations, but who will undertake to distinguish them by appearance alone from those non-syphilitic? You may have true chancre upon the cervix uteri, though it is very rare, and about that there can be no doubt.

Aphthous ulceration may perhaps be more common in syphilitic patients, but it is impossible to deny that it may occur without venereal taint. Mr. Whitehead thus describes it:—

"The aphthæ, as seen on the labia uteri, are surrounded by, or rather situated upon, a dark-red, inflamed surface. They are slightly raised, in shape irregularly circular, and appear at first view as grey, isolated incrustations. If a piece of dry lint be brushed over them the crust is detached, leaving a red surface of corresponding dimensions, which is minutely granular and bounded by a well-defined, slightly elevated margin. They are about a quarter of an inch in diameter, larger or smaller."

Decidedly the most characteristic of all these morbid changes, and the only one upon which we should place much reliance, is the presence of warts.

"Warts," says Mr. Whitehead, "are not uncommonly seen growing upon parts about the orifice and cervix of the uterus. So far as I know, excrescences of this kind, so situated, are not traceable to any other than a specific origin, and, I believe, there is no phenomenon more certainly indicative of the syphilitic diathesis than this. Sometimes they are seen springing from the surface of the vaginal membrane in different portions of its extent; sometimes from the vulva, around the anus; between the nates and adjacent situations; they all alike indicate the presence of the venereal taint, which is liable to be transmitted to the offspring."

We regret being conscientiously obliged to differ from so diligent and intelligent an observer as Mr. Whitehead; we do so respectfully, and with a full consciousness of the obscurity

of the subject and the difficulty of arriving at a full and accurate knowledge of the matter.

There is one point upon which the author has laid great stress, and which we think deserving of more attention than has been given to it by other writers,—we allude to the condition of the blood in syphilis, its diseased state, and its capability of giving origin to other developments of the disease. Thus, he observes that,

"There are sufficient reasons for believing that the blood of persons labouring under diseases of this class is in a depraved state from the outset of the attack to its termination; and it is probable that this abnormal condition is due to the addition of some noxious agent, the precise nature of which microscopical and chemical processes have so far failed to determine. The potency of this morbid principle is sufficiently evident in the effects which it produces; the perversion, for instance, of the processes of nutrition, the impairment of organic functions, disturbance of the fundamental arrangement of solid tissues, derangement of the health generally, and the consequent abridgment, in many instances, of the natural term of life."

Let us add, that depravation of the blood appears a far more philosophical as well as more intelligible explanation of many of the cases of transmitted syphilis than the mechanical theories of many modern writers.

Mr. Whitehead has given us some interesting data of the effects of syphilis upon the fœtus *in utero* and after birth:

"Out of 256 deliveries of syphilitic women in my own practice, 110 terminated prematurely at different periods of the process. In five cases this event happened at two months; in thirty at three months; in thirteen at four months; in four at five months; in ten at six months; in thirty-nine at seven months; in sixteen at eight months. Only two of these were born alive; they were seven months children. One of them died on the second day, the other a few days later.

"Of the remaining cases, amounting to 146, said to have been at the full time when delivery took place, sixty-three died at the following ages: twelve during the first week; two in the second week; one in the third week; five in the fourth week; eight during the second month; six during the third month; seventeen during the second quarter of a year; three in the third quarter; one in the fourth quarter; seven during the second year; and one in the third year of life. A few were still-born, and a considerable number of those who survive are still infants, a large proportion of whom may probably not live beyond the period of early childhood."

Our notice, too brief and unsatisfactory for our wish, has, however, occupied so much space that we can only refer our

readers to the work itself for the description of the cutaneous eruptions in children and their treatment. A perusal cannot fail to bring its own reward, in the addition of a very valuable collection of cases to those already on record, and some very sound and judicious observations by the author.

We can, therefore, and do most warmly, recommend the work to the profession as the result of great experience carefully recorded. It is evidently the production of a veteran in the profession, as regards minute and trustworthy observation, and of one who is independent of, yet just to, the labours of others.

A Practical Treatise on the Management of Diseases of the Heart, and of Aortic Aneurism, with especial reference to the Treatment of those Diseases in India. By Norman Chevers, M.D., Civil Assistant Surgeon, Chitagong, Bengal. Calcutta: Lepage and Co. 1851. 8vo. pp. 150.

Collection of Facts illustrative of the Morbid Conditions of the Pulmonary Artery. By Norman Chevers, M.D., &c., Bengal. (Published in the London Medical Gazette between July, 1846, and September, 1851.) London: 1851. 8vo, pp. 137.

In relation to diseases of the heart two erroneous impressions influence the public mind in the present day: first, that they are now more prevalent than formerly; and, secondly, that medical treatment has little power in controlling the fatal progress of this class of affections. When we reflect on the causes which are regarded as productive of diseases of this organ, we cannot subscribe to the opinion, that their frequency is greater now than it ever was; and we believe that this idea arises from the fact that, the skill of the physician in diagnosis being more perfect, the true existence of disease is established where in similar cases it would formerly have been overlooked, or would have received its appellation from some of those consequences which necessarily follow structural changes of this important organ.

The first work, the title of which we have given above, disproves well the second false notion referred to. Dr. Chevers truly observes:

"When we find that life may be continued for many years where the heart is crippled by such defects as closure of the ostium of the pulmonary artery, or obliteration of the thoracic aorta, a hope of obtaining the aid of nature's adaptive recourses in our plans of

treating much less formidable impediments of the organ, becomes our leading encouragement. We then learn to perceive the necessity of not trusting merely to the treatment of symptoms in heart disease; but having diagnosticated the particular lesion which exists, our object is, to be enabled to judge, almost with mathematical precision, what consequent morbid changes are likely to occur; and to perceive, with the utmost clearness, those saving adaptations of parts and compensatory alterations of function, which also have a tendency to become established. This done, our main efforts will be directed to averting the former, and to promoting the latter."

In support of the opinion that, under proper management, disease of the heart may be stayed in its progress for a prolonged period, we may mention the following case. A gentleman advanced in life became very much broken in health; he was under the care of a physician who pronounced him as labouring under climacteric disease. The patient, having ascertained from another medical practitioner the nature of this affection, was thrown into the greatest despondency: under these circumstances we first saw him. We found him labouring under disease of the mitral valves, accompanied by aggravated dyspepsia. A course of purgation relieved the dyspepsia, and the patient considered himself as perfectly cured. His family were made aware of the character of his disease, and, with proper management, he for ten years subseqently enjoyed long intervals of good health, when, contrary to the advice of his friends, he took a long journey in an open vehicle. Endocarditis was the result, pulmonary engorgement with dropsical symptoms followed, yet he survived for two years. A *post mortem* examination revealed the disease of the heart, the diagnosis of which had been made twelve years previously.

Dr. Chevers, with excellent judgment, enumerates the following indications of treatment in organic heart disease.

"1st. To diminish, if possible, the valvular or other immediate causes of obstruction.

"2nd. To endeavour to remove all causes of impediment to the circulation existing in the lungs, abdominal organs, and capillary system generally.

"3rd. To lessen vascular distention by reducing the bulk of the circulating fluid, without impoverishing the system.

"4th. To sustain or restore the power of the heart, and to reduce the capacity of its dilated cavities.

"5th. To equalize the circulation, and to maintain free vascular action on the surface, by regulating the temperature, clothing, &c., and to provide due access of pure and well-oxygenized air.

"6th. To remove and avert irritation and excitement of the nervous system, and to procure, as far as possible, rest and tranquillity of body and mind."

In the consideration of the first indication the author alludes to the danger of rash attempts to remove old endocardial disease, particularly by mercury, in the vain hope of causing absorption of the deposit; he, however, attempts, probably with too much refinement, to form, from physical signs, a diagnosis between a clear fibrinous deposit in the sub-endocardial fibrous tissue, and the deposition of lymph or fibrinous coagula upon the free endocardial surfaces of the obstructed orifice. We believe that in determining on the probability of the absorption of endocardial deposits, the practitioner should be intimately acquainted with the history and progress of the case. In rheumatism, when the heart becomes affected while the patient is under the care of the physician, the character of the physical signs may be of some value in determining the seat of obstruction, but in those cases where the previous state of the heart is unknown they must be inefficient guides, and yet a knowledge of the situation of the deposit is of much importance as regards treatment, for, as our author observes, " deposits on the free endocardial surface can scarcely be removed while those that are recent and interstitial are, in a great degree, subject to absorbent action."

An interesting question arises, whether the method of treating rheumatism has any influence in the prevention of heart affections occurrring in its progress? What may be termed the revival of the humoral pathology has, in a great measure, modified the treatment of acute rheumatism, so called. Specifics are now desired, and depleting remedies are, by most practitioners, nearly exploded. We are not disposed to attach much value to the change. Admitting the specific character of rheumatic inflammation, and that it cannot be cured merely by bleeding, we yet affirm, that in no disease, particularly in its early stage, and in young and sthenic individuals, is a judicious detraction of blood of more value in lessening fever and assisting the action of remedies, and in such cases we believe that it acts as a preventive to the supervention of heart affections. A singular fact is mentioned by our author, and is supported by the observation of others, that although acute articular rheumatism is very prevalent in India, the association of pericarditis and endocarditis with this affection is remarkably rare.

The author's observations on the treatment of rheumatism are not, in our opinion, characterized by the sound judgment displayed in other parts of the work. As an example we quote the following passage:

" The most successful remedies for rheumatism are all evacuants; and nearly every new specific is of this class. The disease ap-

pears to depend upon the presence of some poison; it may be lactic acid, or some other (acid?) material in the blood; and, as we have not succeeded in discovering the means of neutralizing this, our main object is to expel it. Hence we have colchicum, and more gentle means of continued purgation, to remove it by the bowels; calomel to act on the liver; the salt of potash; lime-juice, *et id genus omne*, to expel it by the kidneys; antimony, ipecacuan, and all other diaphoretic agents to eliminate it by the skin. Lastly, there is general blood-letting, but this is the least appropriate measure of all. Bleeding upon this indication is as useless as it would be if employed to cut short the active operation of arsenic or of tartar emetic."

If rheumatism depends on a materies morbi, which must be eliminated from the system before relief be obtained, we ask, how can the success of the treatment by opium and aconite be accounted for? This plan has received the sanction of high authorities in whose hands it has been remarkably efficacious. We are of opinion that the best mode of treating rheumatism is still an undecided question, but we are slow in believing that animal chemistry can give the all-important assistance some expect therefrom in its solution. In expressing this opinion we feel that we are in some degree *pronouncing* against the present fashionable mode of investigation; we do not deny its utility, but we protest against its being ridden as a hobby, particularly over the field of practical medicine.

The author's remarks on the second indication are valuable and worthy of attentive perusal. We shall only allude to one point which is of much interest, namely, the distinction which ought to be drawn between impediments to the circulations and lesions of the heart caused by originally defective thoracic development, and those imperfections of the lungs induced by congenital disease of the heart. The necessity of this distinction in practice is evident; in the one case, while the development of the chest in youth is in progress, our efforts should be to bring the lungs fully into play by gymnastic exercises and similar means; in the other, such a course of proceeding must be injurious as tending to aggravate an organic condition, which is irreparable.

Elucidation and improvement of the general treatment of diseases of the heart are presented in the work before us. Dr. Chevers justly disapproves of Valsalva's plan, and of violent purgation, yet he exhibits the value of regulated restriction in the quantity of ingesta and of purgatives, and diuretics given with proper precautions. In relation to the use of the latter class of remedies the following sound and practical remarks are offered:

"Unfortunately, we are usually called upon to require the aid of the kidneys at a stage of heart disease and dropsy, where the efficient action of these and other excretory organs can least be demanded. There are few more difficult cases than that of a person who is the subject of advanced cardiac obstruction attended with bronchitis and serous effusions. Here it will generally be found that the urine is high-coloured and scanty, the bowels torpid, the skin dry, the secretion of bile defective, and transpiration from the pulmonary exhalents impaired by the diseased state of the bronchial mucous membrane; in fact, that every natural outlet for the pent-up fluids is obstinately closed. This is a crisis at which a full bleeding from the arm, a brief course of digitalis, or of squill and juniper, or a dose or two of elaterium, would prove a direct and almost infallible means of despatching the patient to his grave, *secundum artem antiquorum*. Providing anything can be done here,—and it happens fortunately that, in many instances, our means of aid are not wholly exhausted, even at this unhappy conjuncture,—the disentanglement of the morbid complications becomes a somewhat knotty task, and no ordinary caution is required in deciding which organ should be first selected with a view to attempting the restoration of its functions. A fatal error will be committed, if we at once endeavour to act upon the kidneys: their state of congestion cannot be relieved so long as the liver and the heart are gorged with blood, and the skin remains inactive, or while the organs themselves actually suffer from the pressure of large ascitic effusion; under these circumstances all diuretics become local poisons. The organs are, for the present, physically incapable of being excited to healthy action, but their susceptibility to irritation and inflammation is increased tenfold. The safest and most physiological course, I believe, is, first, to endeavour to restore and to excite the action of the skin. A well-managed plan of active diaphoretic treatment can now scarcely be attended with danger. At the same time, mild expectorants and aperients may be employed, but with a less sanguine hope of present success. A strict limitation of ingesta will tend to relieve the heart, and to reduce the hepatic congestion; and then, as the skin begins to act freely, and dyspnœa and palpitation become somewhat abated, a certain amount of relief to the kidneys may be anticipated, provided the congestion of these organs is not associated with advanced structural disease. This tendency to restoration of function may be aided by local abstraction of blood, the application of heat, counter-irritation, dry cupping, &c. In certain instances, every means of treatment will fail to procure the complete disembarrassment of these organs. In cases where the urine has become albuminous (*still retaining in great measure its due specific gravity*) in consequence of mere congestion, they may generally be relieved, provided the delay to their circulation has not been of extremely long standing; but where, as is too often the case in heart disease, the kidneys have long been organically in fault, secreting urine of low specific gravity, either with or without albumen, or where bloody urine of any tinge has latterly been passed, the prospect of amendment is not

to be encouraged so sanguinely as to lead to the trial of remedies which might otherwise prove too expensive for the system. When, after the removal of mere congestion, the natural condition of the organs has been for some time restored, the cautious use of diuretics for short periods may be attended with benefit; but, in any case where the urine has previously contained albumen, these medicines should be employed only upon urgent necessity, with the utmost caution, and in their mildest forms, and with the precaution of daily testing the urine by heat and nitric acid."

Dr. Chevers regards true hypertrophy of the ventricles as alone caused by impediments to the circulation, or from habitual plethora creating this state by the increased difficulty to the heart propelling its contents. He denies the existence of "concentric hypertrophy," and believes that the heart cannot become too muscular and too powerful from mere hypernutrition. In fact, our author regards hypertrophy as a reparative process in obstructed circulation, and dilatation as the result of persistence or aggravation of such obstruction, the heart being weakened in its attempts to carry on the circulation. Entertaining these views, he asks, is it rational to believe that hypertrophy can ever become excessive?

The inference drawn from these doctrines is, that hypertrophy has little influence in the production of arterial cerebral apoplexy. The author regards the latter as in association with hypertrophy rather than as the effect of this condition of the heart. We do not fully agree with Dr. Chevers in this opinion. In some instances we have evidence of the increase of the *vis a tergo* of the circulating fluid in hypertrophy of the heart, certainly producing injurious effects on the blood-vessels of the brain. It is on their power of resisting the increased congestion that the result must depend in relation to the production of apoplexy, and the important practical point in the consideration of this subject is, that we must not be deterred from taking energetic measures to relieve the disturbed circulation of the brain through fear of weakening the heart; we must combat the greater evil at the expense of producing the lesser, which, as a matter of course, would be consequential on the progress of the disease.

There is only one point more of a practical nature to which we shall advert, namely, the use of sedatives in heart disease. Dr. Chevers is opposed, *upon principle*, to their adoption altogether. As a general rule, we agree with him in a prejudice against their administration; but there are exceptions to the rule. In those cases where there is great disturbance of the nervous system, with loss of sleep, a sedative combined with a

stimulant will often afford great relief. Paradoxical as it may appear, we have used, under such circumstances, the combination of digitalis and carbonate of ammonia; and in a case brought under the notice of the Pathological Society of Dublin some years since by Dr. Fleming, this mode of treatment had been remarkably successful in alleviating the sufferings of a patient whose condition precluded the use of a direct sedative.

Dr. Chevers' second work is an interesting history of congenital irregularities and pathological conditions of the pulmonary artery. We must refer our readers to the book itself, which contains much novel and interesting information, and we shall merely notice a few points in elucidation of the author's views.

In treating of the subject of cyanosis, the author combats the long-received opinion that the disease depends on the admixture of venous and arterial blood through the abnormal cardiac apertures usually discovered in such cases. He supports the doctrine of Stillé, that cyanosis depends on general congestion of the venous system from obstruction in the right side of the heart, or in the pulmonary artery impeding the return of its blood to the lungs. It is, however, remarkable, that this disease is not induced in adult life even by extreme narrowing of the pulmonary orifice, thus exhibiting the adaptation of the system at this period of life to morbid changes in the circulation.

The causes of the immunity from disease of the right side of the heart, as compared with the left, are explained as follows:—

"I am disposed to attribute the greater immunity from mechanical injury and disease of the right heart and pulmonary artery, in some measure, to the comparatively yielding nature of their structures, the free reflux of which the tricuspid valve admits, whenever the ventricle is over-distended; and the great pliability and extensibility of the muscular, valvular, and arterial tissues—circumstances which must all have an influence in rendering the parts less liable to mechanical injury upon occasions of obstruction and over-excitement. In a very large proportion of the cases of spontaneous mechanical lesion of the heart, the mischief is found to have occurred on the left side. The right cavities being more accustomed to obstructions, and being naturally more yielding, do not so readily suffer from undue distention. It is also highly probable, that the cavities on this side of the heart are naturally more adapted to the reception of irritating fluids, than are those on the left: as, in health, the former receive the highly carbonized blood from the veins, which the latter are accustomed to transmit only in a perfectly depurated stream; so, in disease, a strongly azotised, or

otherwise morbid fluid may be conveyed with impunity by the right cavities, while it produces the most irritating effects upon the left. All are aware, that pungent substances, which may be borne without injury on the mucous membrane of the interior of the lip, produce the most violent inflammation if applied to the conjunctiva of the eye; and yet it would be difficult to assign to this any other reason than that of necessity."

The author devotes a considerable portion of his work to the description of various diseased states of the pulmonary artery, but our space forbids an analysis of the details, which are well worthy of the attention of the pathologist. These two works of Dr. Chevers are evidently the productions of a zealous and talented observer. We hope yet to see them in a more connected form, and free from those typographical errors for which he offers an apology. A concise description of the physiology and pathology of the heart, as received by the best authorities in the present day, divested of all the erroneous theories and contradictory opinions which have hitherto enveloped this subject, would form an admirable addition to his labours. We consider him well qualified for the task, and we are of opinion that a book of this description is a *desideratum* in medical literature.

The Medical Aspects of Death, and the Medical Aspects of the Human Mind. By JAMES BOWER HARRISON, M.R.C.S.E., &c. London: Longmans. 1852. Foolscap, 8vo, pp. 165.

IN the elegant little volume now before us, bearing the above title, Mr. Harrison, of Manchester, already very favourably known as a medical writer, presents an interesting view of two important aspects of mortality. The latter, on the Medical Aspects of the Mind of Man, a most able essay, has already appeared in the pages of our excellent contemporary, the Psychological Journal, and we doubt not has there fallen under the observation of the majority of our readers. The former contains, first, an excellent *resumé* of the signs of death, a subject which has lately been very fully investigated, chiefly by the French physiologists, and the important results arrived at by whom we have recently noticed at length[a]; second, a review of the causes of death, or the mode in which life terminates; and third, a notice of the antecedent symptoms of death, or the *bodily changes* which immediately precede it. The entire is

[a] New Series, vol. xii. p. 107.

written in a highly philosophic spirit, containing throughout not alone judicious observations on the intimate link between life and death, which do honour to the author, but valuable medical hints. We cordially commend the tone and character of these essays, and we earnestly press their perusal on the profession. Indeed they may be read, too, with advantage by the non-professional public.

The Nature and Treatment of Softening of the Brain. By Richard Rowland, M. D., Assistant Physician and Lecturer on the Principles and Practice of Medicine at the Charing Cross Hospital, &c. &c. London: Highley and Son. 1851. 8vo, pp. 137.

Though much has been written since Rostan's memorable work, " Recherches sur une Maladie encore peu connu, qui a reçu le nom Ramollissement du Cerveau," published in 1820, no work specially devoted to this interesting lesion has issued from the English press in that interval. Its bibliography chiefly includes notices and articles thereon which appeared in the various medical journals, or which have been incorporated in volumes upon the practice of medicine, or the pathology of diseases of the nervous system. Dr. Rowland has, therefore, sufficient excuse in submitting his work to the notice of the profession; nay, more, he has done good service in the cause of cerebral pathology, even were the work before us to be viewed merely as a compilation. Such a *resumé* becomes accessible to all, and that knowledge, hitherto scattered over the vast field of medical literature, which few have the means or time to traverse, becomes widely disseminated. This laudable aim seems to have been the object of our author, as may be gleaned from his introductory observations :—" I propose in the following pages to make a careful analysis of the facts bearing upon this important disease; and, if possible, to arrive at its separate and individual history."

Such is the scope which our author laid out for himself. Of the manner in which he has executed his task, and as to the degree of originality which the facts, or their management exhibit, our readers may judge in the course of this review.

The most important information at which we can arrive, touching any disease, is its nature or pathology. The diagnosis and the treatment are, in a great measure, dependent thereon. Now, the nature of a disease can be examined in an ordinary way by a careful inquiry into the causes, symptoms,

and morbid anatomy, as ascertained from actual cases, or from the recorded opinions of accurate observers. This method, when subjected to the influence of sound reflection, has sufficed, in the majority of cases, to establish a basis for a true pathology; and, with the aid of clinical observation, for correct diagnosis and treatment. But there are diseases, not a few, which fail to be thus elucidated, requiring, in addition, powers of observation which have been brought into use but very recently in the province of practical pathology. We allude to means which exhibit the intimate and elementary structure and progress of morbid changes, as distinguished from that coarser anatomy which suffices to explain mechanical signs. In reference to the disease before us, until the year 1840, the former method had been pursued by pathologists, but unsuccessfully; for scarcely two coincided in their views as to its exact nature. It was reserved for Gluge in 1840, Bennett in 1842, and subsequent observers, to throw the light of truth upon this hitherto obscure lesion, and present a decided description of the disease, based upon the surest data which the present advanced state of professional knowledge could afford.

The author has divided his subject into several sections, which occupy 121 pages, with a sketch of the nature and pathology of the disease; six pages with the diagnosis and prognosis; and the remaining ten with the treatment. His discussion of the *nature* of the disease is commenced with a general sketch of the ordinary varieties, as referred to by authors and practitioners. These include the primary or idiopathic softening (a rare case), sympathetic or secondary softening, acute softening (not necessarily inflammatory), inflammatory softening, apoplectic, ataxic, chronic, and latent. These names, based upon some theory of the origin, the symptoms, or the duration of the disease, have sprung up among practical writers, and indicate rather special series of symptoms, than any attempt at a true pathology. Indeed, although the terms may be the result of practical experience, yet, were we to be guided in managing a case by a reliance upon them alone, we should most egregiously err. They have their use, however, inasmuch as they are the exponents of the *coarser* observations in practice, and, as such, true to a certain extent. They are, moreover, familiar, and serve to give an idea of the prevailing forms to the inexperienced practitioner.

Dr. Rowland next passes in review the principal *symptoms* observable in the disease, as an aid to a clearer apprehension of its nature and characters. This section, which extends over thirty pages, is well drawn up; and, as a whole,

characterizes the disease unmistakeably. We are induced to give a few extracts from this portion of the work. Speaking of the *aberration of the intellect*, he says (page 15):

"It often happens that the first circumstance that calls attention to the patient's state, and awakens the apprehension of his friends, is some symptom of this kind:—there is unwonted slowness of comprehension, failure of memory in regard to familiar names and circumstances, and incapacity for the common routine duties of life. The progress of the disorder is frequently marked by the gradual deepening of the mental torpor, until perfect imbecility be established. But the destruction of the intellect does not in general advance in this uniform manner; the tenor of the course is interrupted by accession of more determined oppression, in which the higher cerebral functions are sometimes completely suspended. These attacks, whether of lethargy, somnolency, or coma, form so important and characteristic a feature of cerebral softening, that it may be proper to glance at the various modes of their occurrence. In acute cases a seizure of this kind may come on very early in the disease, and terminate fatally." (Here an instance is given.) "But the general character of these invasions is, that they are transient and frequently repeated. In chronic softening, the case may go on in this manner for months or years, paroxysms of insensibility or coma returning at intervals during the whole period."

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"Another circumstance observed in these seizures, and highly indicative of cerebral softening, is the rapid, almost the abrupt manner in which consciousness is restored. At one hour the patient is labouring under symptoms of deep apoplexy, and at the next he is found with his memory and judgment in a great measure regained, and even sitting up and conversing cheerfully."

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"There is a species of mental imbecility sometimes accompanying cerebral softening, which is manifested chiefly in the manner and actions, and on that account is called by the French physicians *deliré d'action*. These patients are generally aged persons; they are occupied continually with some employment without motive, almost without consciousness, and are in general very restless and irritable. They dress and undress frequently in the day; busy themselves in unmeaning preparations, and continually repeat the same act, forgetting its previous performance. From this state they generally pass to more determined dementia, in which the mind is hopelessly clouded, the expression vacant and idiotic, while at the same time the extremities are paralytic."

The next class of symptoms which our author discusses are those connected with *speech and articulation*. They are highly interesting, and are graphically described. The speech may be affected in various ways. The patient may be unable to ar-

ticulate, or even to produce a sound; which arises, not from any defect in the organs employed in the mechanism of speech, but in that part of "the process by which the mandates of the will are conveyed to the organs of articulation." Again, the speech may become hesitating and drawling in utterance, occasioned rather by a tardiness in the process of thinking than by deficient memory. In another case it may arise from positive want of recollection, sometimes so sudden as to stop the patient while in the act of expressing an idea. A fourth form is observed in the misapplication of words and sentences. Several curious instances are here stated in illustration.

The third class of symptoms refer to *voluntary motion*, and are divided into paralysis of one or more limbs, tonic contraction of the flexors, and convulsions. The palsy is as often sudden as gradual, rarely limited to a limb, eventually hemiplegic. The spastic rigidity is fully noticed by our author, and though relied on by Rostan and Andral as almost pathognomic of softening, the experience of other pathologists leads to the belief that, like the other symptoms, taken singly, it is not peculiar. Besides convulsions, our author notices "another very curious symptom, that seems to occupy a middle station between convulsion and contraction, which consists of a series of automatic movements, frequently repeated and entirely under the control of the will. Rostan observed in one of his patients, that the hand was opened and closed alternately. Lallemand had a patient whose left arm and hand were continually agitated with movements of flexion and extension, until the limb became palsied." In another case, "the right arm was raised every two or three minutes, and the hand carried by a loose, disjointed kind of motion to the head; then, the muscles suddenly relaxing, the arm fell to the side. These movements came on in paroxysms, which lasted one or two hours."

The symptoms connected with *altered sensation* are next noticed. These are generally early observed, and "when they take the hemiplegic form, and persist in the same limb, the case should be thoroughly sifted, for they are expressive of danger." Absence of sensation is generally subsequent to paralysis, and in many cases wanting. As we observed very opposite conditions in the voluntary movements, so it is in sensation; it may be absent, or blunted, or acutely neuralgic.

The next symptom is *headach*, which is amongst the earliest and most generally present; and as it is frequently intermitting or varying in its character, may be readily passed over as of minor importance. It is a symptom which requires the

corroboration of others, particularly those already referred to, before we can give it its true value.

Save in the latter stages, the organs of *special sense* are seldom prominently affected. Durand-Fardel has distinctly proved by numerical references, that the state of the pupil gives no certain aid in the diagnosis between softening and apoplexy; other organs are still less affected.

It is only in the acute cases that the stomach and chylopoietic viscera present evidence of the cerebral lesion; the urine is not indicative. In the chronic state, it will, of course, present the alkaline phosphatic condition common in cerebral disease. The respiration presents no subject for remark. Our author notices, in connexion with this, however, a peculiarity in the respiratory movements, pointed out by Serres as indicative of cerebral disease. It is an inequality in the expansion of the lungs, and is, most probably, correctly ascribed to the existence of latent pneumonia or other pulmonary disease supervening in the course of the disease. The circulation seems little affected except in the apoplectic and ataxic varieties.

"The expression of the countenance is very peculiar in confirmed softening; and in old chronic cases that mixture of imbecility and astonishment which is so justly held to portray the disease is strongly impressed on the features, suggesting at once the existence of the lesion."

Incorporated with the symptomatology, our author takes the opportunity of noticing the views of pathologists as to the causes of the different classes of symptoms, more especially in regard to the aberration of intellect, the inarticulation, and the perversion of sensation. We think that such observations should be preferably included in the section referring to the nature and pathology of the disease, as this would prevent needless repetition. We shall, therefore, defer the remarks we intend to make thereon until we arrive at that section.

A description of the *causes*, both predisposing and exciting, occupies about twenty-eight pages. In attempting to trace these, he mainly trusts to an examination of cases verified by dissection, "without, however, overlooking other means which, although less worthy of reliance, might assist in confirming the results obtained from more authentic sources."

Hereditary predisposition, generally deemed influential, according to the author's experience, is very limited in predisposing power. As to previous constitutional states, he is inclined to believe that a considerable portion of those attacked "have

either undergone some debilitating course, or were originally of a feeble constitution." With regard to *sex*, the statistics based on Andral's cases, in addition to others taken from various sources, give a proportion of 89 males to 127 females. On this subject reference is made to the returns of the Registrar-General, which show that cases of paralysis, "which is probably the disorder that in these tables might be most safely taken to represent cerebral softening," are more frequent in females,—a conclusion not generally admitted. Although this result agrees with the statistics referred to, still it must be considered of little corroborative value. Ramollissement forms no item in the Registrar's reports; and the term "paralysis" is so loosely applied, that no scientific calculation should be based thereon. A preponderance of cases of softening occurs in advanced life; this fact is deduced from an analysis of 260 cases, as well as the authority of most writers. But we are of opinion that his proportion of juvenile cases (namely, 16 under twenty years of age), does not present a true ratio. Our author is himself inclined to this view, as he says, "the common opinion, that this morbid change very seldom affects the infantile brain, seems to require some modification;" more facts are required on this point. We have few statistics that can be relied on in reference to the influence of *occupation*. Allusion is made to the army reports of Major Tulloch, and the reports of the Registrar-General and other sources, but we think with very little profit, as nothing short of accurate and extended comparisons would suffice to give any clear decision. Our author, in concluding this portion, truly observes:

> "It is indeed remarkable what a large proportion of these cases have an *individual* history, in which some circumstances bearing exclusively upon the patient have apparently occasioned the malady; either acting as a direct irritant on the brain, or else inducing its disorganization through the derangement of other organs."

Dr. Rowland accordingly proceeds to review the more *exciting* or direct causes arising from injuries to the brain or system by accident or disease. The influence of shock or injury to the head, he believes, increases the tendency to deranged action, rather than actually develops the disease. Mental causes, especially long-continued anxiety and distress, he deems, with Dr. Winslow, a cause of great frequency. Continued inebriation he considers, not as an immediate agent, but as leading, in the first instance, to chronic meningitic irritation, which ultimately engages the cerebral structure itself.

There is great scope for observations on the influence of

other diseases, more particularly in connexion with affections of the heart.

In a paper published in the London Medical Gazette, May 18th, 1849, Dr. Rowland presents some cases culled from various authors, suggesting the probability, "that morbid processes, involving the peripheral extremities of nerves, may excite disease in their central organ, in which the law of cross-action is observed as in palsy." Whether this be the true explanation or not of the occurrence, he has here adduced many cases of softening of the brain in connexion with, and supervening upon, disease elsewhere; and indeed the object of the paper referred to was really to show that softening of the brain in one hemisphere was connected with pneumonia of the lung of the opposite side; and he has brought forward cases from Morgagni, Rostan, Andral, Bright, De Chambre, Lallemand, Cruveilhier, and Durand-Fardel, which seem to bear out his opinion. The connexion with diseases of the heart, however, has been a subject of much greater discussion amongst pathologists. The experience of several authors on this point is given, and statistics from a small number of cases furnished, which would appear to show that hypertrophy is less influential than valvular disease,—if indeed the coincidence may not have been accidental; or, as Drs. Copeland and Watson suggest, the heart disease may not, in many instances, be regarded as "typical of general derangement of the vascular system." The coincidence of fatty degeneration of the heart and cerebral softening is evidently dependent on a general cause.

In connexion with this subject, our author has not alluded to Dr. Norman Chevers' able researches upon the effects of obliteration of the carotids upon the cerebral organ. This writer, in the Medical Gazette for October 31, 1845, adduces a number of instances where softening supervened, apparently from the obstruction to the cerebral circulation produced by the pressure of an aneurismal sac on the carotid, or by its ligature.

Besides pneumonia, softening is noticed in connexion with phthisis, but only as a rare phenomenon. Disorder of the digestive organs or the kidneys seems to have little effect.

The author notices, what we have several times observed in fever epidemics, the supervention of cerebral symptoms very similar to those of cerebral softening. The condition of the two cases is, however, extremely different. Many of these fever cases recover after a protracted convalescence; and besides the symptoms are too uniform in their character.

After referring briefly to some other influences, he notices, in closing this section, a large number of cases, where—

"The action of an exciting cause is not apparent, especially in the chronic form of the disease. But the oppression of the brain commences and is augmented slowly and gradually without the intervention of any circumstance acting as a shock on the system; and even when the symptoms undergo a sudden aggravation, it is not always possible to discover any cause to which the accession can with any probability be referred."

Dr. Rowland next enters upon his inquiry into the true pathology of the disease. It is evident that this can be arrived at only after a strict examination of the entire phenomena of fully and accurately recorded cases, and a comparison of these with the symptoms and progress of cases of other diseases well known, but similar in their indications to the one under review. This examination must include a faithful statement of the morbid anatomy, as a *sine qua non*, under all phases and stages of the disease. It is plain that the information derived from a consideration of the symptoms and progress and the causes of the disease are totally insufficient to bring us to a proper decision; these will not tell us of its nature or pathology; they will not inform us whether the disease is inflammamatory or otherwise; they cannot even decide for us its diagnosis, and much less a rational line of treatment. Our author is fully aware of the difficulty of the point to be investigated; at the same time he believes that the pathological facts "will justify the conclusion that there are several morbid processes which lead eventually to the disintegration of the cerebral texture, each of which it is of importance to recognise in a practical history of the disease." The question then is, what is the nature of these processes? Are any of them inflammatory? and if so, what are the others? and how is each to be distinguished in practice? and lastly, can we lay down any rational basis for treatment? These are all important matters in the history of any disease, and, *à fortiori*, of this.

What steps have been already taken towards this wished-for goal? Let us see. In the first place our author takes up the coarser morbid anatomy of this affection; and we shall find that the most elaborate statements thus limited will fail to impart a clear view of its nature.

A table from Andral is given to exhibit the most common *seat* of the disease, from which we find that the anterior and middle lobes and corpora striata are affected in more than one-half of the cases cited. We think, however, the number from which the analysis is made is quite too small to supply a satisfactory conclusion. Indeed, this is evident, when we find authors of the highest eminence holding opposite opinions. Two points

are, however, certain: the extent of the lesion, which is almost always limited to a portion of either hemisphere; and secondly, when both are involved, one has a preponderance of disease.

The author justly objects to the importance which is too often attached to the mere *colour* of the softening, more especially when it is made the basis of a pathological theory. At the same time, the terms red, white, and yellow softening cannot be abandoned in our ordinary description of its morbid anatomy. The redness in what is called *red* softening is properly ascribed to various conditions, in which the blood plays the chief part. Thus it may arise from venous congestion, hyperæmia, extravasation, staining, and, what Cruveilhier has designated, capillary apoplexy. The condition, therefore, may be a sequence of an apoplectic explosion, venous congestion, true inflammation, or an accidental cause. It it is plain that, to determine which of these changes is present in any given case, the unaided eye is quite insufficient. But if there be difficulty in determining this point in cases of red softening, much greater are the sources of inaccuracy in the instance of *white* softening, which, in some cases, may be readily mistaken for purulent collections: the microscope alone can inform us of the true nature of this form of the disease. Its characteristics have been clearly shown by the researches of Gluge and Bennett, who have discovered its inflammatory origin in the majority of cases; and when the inflammatory products are absent, other conditions, to which we shall allude presently, exist. The *yellow* softening, according to our author, represents very different morbid states. His own experience of this condition is thus described:—

"Confining the description to what I have myself witnessed, the following are the aspects which this species of softening may present:

"The softened mass may be free from foreign ingredient of any kind, the nervous matter being merely reduced to fragments. In one example of this kind, the diseased portion was of a deep glossy yellow colour when first exposed, but this appearance soon went off, and the yellow tint was changed into a dirty ash colour.

"Rokitanski says that the colour of this softening depends upon the infiltration of a thin fluid, which can be squeezed from the disorganized structure; and perhaps the loss of colour just referred to might have been occasioned by the subsidence of this fluid. The softened mass, however, usually retains its colour until putrefaction is far advanced, and does not part with it under any kind of manipulation.

"In other cases, the yellow matter is loaded with oil globules, which are deposited in the midst of the comminuted substance, and

may sometimes be detected in the vessels ramifying through it. Examples of this variety will be again referred to.

"The diseased structure is occasionally observed of rather a deeper hue, approaching a fawn colour. A specimen of this kind which I observed with Mr. Taunton was wholly made up of nerve fragments and innumerable blood discs. The brain surrounding the yellow mass was likewise softened to a considerable extent, but its natural colour was retained. In this latter portion, numerous oil globules were observed, and here and there an exudation corpuscle.

"These are probably but a few of the modes in which yellow softening may occur; but they are sufficient to show that the peculiarity of tint does not invariably represent the same morbid taint. Nor does it appear likely that the yellowness is always communicated by the same ingredient; but it may be sometimes derived from the admixture of the blood, at others from the presence of fatty matter, or from the presence of a yellow pigment otherwise derived."

Having noticed the *dark* softening which occurs occasionally and chiefly in the medullary structure, Dr. Rowland goes on to consider the degree of *consistence* observable in softening. He objects to "the common methods of testing suspected portions," and in this difficulty deems the microscope of essential service, which seems sometimes to present the only means of discovering the presence of disease. He then passes in review the principal cerebral affections found in connexion with softening, and which are necessary to be known, both to give a complete idea of the morbid anatomy of the disease, and to aid us in deciding upon its pathology. *Meningitis* is among the most common precursors. Some have considered this fact as infallible proof of the inflammatory nature of the cerebral disease, but evidently without sufficient reason, as the author shows most distinctly, that not only have the two diseases separate histories, but that, even in cases of softening occurring in acute meningitis, the affected spot may show no inflammatory product; and with regard to softening in the immediate vicinity of the inflamed membranes, in cases of acute hydrocephalus, the appearance of the softened texture is, he asserts, suggestive of "any condition rather than inflammation. It is pale, anemic, without even a trace of vascularity; and so far, at least as to its external characters, there is nothing to support this theory of it origin." And with regard to the presence of the inflammatory exudations, there appears to be no uniformity of result. He here combats Dr. West's opinion, founded on the coincidence of central softening with inflammation of the ventricular membrane, by a counter-statement, one generally admitted, that softening is much less frequent in simple than in the tubercular meningitis.

The relation of softening to cerebral congestion and apoplexy forms the next important subject for discussion. It is a matter of dispute whether the apoplectic attack is primary or secondary to the change of cerebral structure; certain it is that the records of pathology prove the frequent occurrence of apoplexy in previously healthy cerebral structure, and also that the most frequent seats of apoplexy are often reduced to a pulp, without the occurrence of extravasation.

Mr. Paget's views, published in the Medical Gazette of 1850, are here adduced, to show that the two diseases may possess a common pathology, namely, fatty degeneration of the vessels leading to the diseased part.

The writer's views as to the changes of the softened tissue, lead to the conclusion that the diseased part, at least in the apoplетic form, may be eventually repaired; "it is doubtful," he adds, "whether the material is renovated by the deposition of nervous matter, or by means of cellular tissue. But as the functions of the organ seem, in some instances, to be restored simultaneously with this action, it is reasonable to conclude that the natural tissue is, in a great measure, restored."

After noticing the "yellow patches of the convolutions," described by Cruveilhier as one of the results of the irritation set up by capillary apoplexy, Dr. Rowland proceeds to mention some of the terminations dependent on a previous softening,—such as cellular infiltration, in which the nervous texture is completely removed; a sieve-like appearance, noticed in the corpora striata, and ascribed by M. Rokitanski to atrophy of the cerebral tissue and obliteration of its vessels; induration, which is, however, not always the result of previous softening; and, lastly, a cystic structure, differing, in several respects, from the remnants of a clot.

Having thus recorded the most important facts known in the history of this disease, the author approaches the question as to its true pathology. He now attempts to answer the inquiry,—What is the true nature of the lesion? Our readers will be prepared at once to agree with him in his assertion, that one variety of the affection, at least, possesses "an inflammatory nature;" that it is, in short, "a local or partial cephalitis." The history, the symptoms, the causes, and the coarser examination of the brain, clearly pointed to this conclusion; and, consequently, many of the earlier writers at once maintained that view. But the microscopic researches of Gluge, Bennett, and others, placed the matter beyond all doubt. Exudation corpuscles and exudation granules were observed in a large proportion of well-marked and accurately recorded cases; and it is

not a little significant, that in those cases where the inflammatory product was not observed, the characteristic symptoms of softening were either imperfect or totally absent. Dr. Rowland, however, is inclined to believe, and we think justly, that Dr. Bennett has driven his conclusion a little too far. His deduction would be, that the inflammatory softening alone can properly be denominated morbid. Our author at once takes exception to this statement, and, we think, with good reason.

On this subject we wish to refer our readers to the seventeenth volume of the first series of this Journal, in which they will find that Dr. Law, in an able paper on disease of the brain dependent on disease of the heart, is led, beyond all question, to the conclusion, "that while ramollissement of the brain occurs as a result of inflammation, hyperæmia, &c., it occurs also under diametrically *opposite* circumstances."

These circumstances Dr. Rowland now refers to; and among the varieties of non-inflammatory softening he gives the existence of *fatty degeneration* the first place. The oil-globules can only be detected by the microscope; and they are observed under various conditions. They may be seen in the vessels, or the substance of the brain, or in both; and may be the consequence of some local agency affecting the nutrition of the organ; or may exist as an index of a general disease, implicating other organs besides. In this latter case the origin of the softening cannot be ascribed to disease of the cerebral arteries. Our author seems to consider that this condition of the brain is most frequent in the general palsy of the insane, in whom the principal characteristics of softening are frequently wanting.

Another origin of non-inflammatory softening has been previously referred to in noticing some of the exciting causes: we allude to the obstruction of the cerebral vessels by aneurism, or ligature, or ossification: or, as in Dr. Law's cases, by diseases of the heart, whose effect is either directly or indirectly to diminish the flow of blood to the head. We are authorised, therefore, to consider *failure of nutrition* as another source of a class of cases of softening.

Dr. Rowland but casually notices infiltration of the cerebral structure with serum as a cause. This view may be deemed as old as the time of Hippocrates, who had some idea of "a humidity of the brain" as the supposed cause of epilepsy. An examination of recorded cases, however, will show that this condition is extremely rare. The softening which is the result of meningitic irritation is frequently free from inflammatory pro-

ducts. How this arises, the author does not pretend to say. Instances of non-inflammatory softening, as the consequence of nervous irritation, commencing merely as a functional disturbance either in the centres or the periphery, complete the list of pathological causes.

It will be seen, then, what very different conditions may be present in different cases of this disease. Is it in our power to distinguish these differences during life? The author, in the few pages that he devotes to the diagnosis, too lightly touches upon this most important matter. He merely refers to a comparison between the apoplectic and the softening coma, and arrives only at a probability. When the attack is sudden, without warning, the chances are that it is apoplexy. In some cases, however, this will not suffice. He thinks the inflammatory softening may be known by the abrupt attack; the acute premonitory symptoms; the age and general appearance; and the fatty degenerative form may be suspected to exist in very aged cases, especially when the *arcus senilis* is prominently observed. But these general views must fail, in a great proportion of cases, to give the proper indication in practice. It may be, the facts are too few to enable us to determine the nicer shades of diagnosis; and we fear that, for some time to come, we must be content with a careful scrutiny of the history, especially in conjunction with the existence of concomitant lesions, to give us a clue to anything like a rational treatment.

The *duration* of the disease is very variable; statistics are given which show a greater rapidity in the progress than our author is willing to allow. As to the *termination*, we fear a too sanguine opinion of the chances of recovery is laid down, for it is stated that "even when the disease is advanced another stage, and the cerebral texture is disorganized, and the inflammatory products exuded, it is possible, under favourable circumstances, for a cure to be accomplished." Death, unfortunately, is *the rule;* and may take place by apoplectic coma, by gradual debility, in convulsion, or by pulmonary disease. The *prognosis*, therefore, cannot be other than unfavourable in the vast majority of cases, even in such as for a space appear to be ameliorated by time or treatment.

Some excellent observations, based upon the previous history of the disease, and relating to that important object of all professional knowledge, *treatment*, close the volume.

Dr. Rowland truly says:

"If the views respecting the pathology of the disease which have been adopted in these pages are correct, practical deductions sug-

gested by them must be, that softening of the brain cannot with safety be treated upon any uniform plan; on the contrary, the management must be varied by the form of the disorder."

He does not, nevertheless, adhere to this arrangement in his observations in this section, but considers the treatment under three heads:—*First*, that belonging to the precursory stage, in which he earnestly enjoins *mental rest*, the withdrawal of exciting causes of every description, purgatives, low diet, and even local depletion to be superadded in plethoric cases, and nourishment and a strengthening regimen in those of an opposite character. *Second*, the treatment necessary at the accession. This depends upon the character of the cerebral symptoms, and the state of the constitution. As to the propriety of depletion in the apoplectic seizure under these circumstances, the following judicious remarks are worthy of all attention:—

"It is," he says, "especially necessary to be guarded in the use of the lancet in the apoplectic accessions that sometimes are among the earliest symptoms, and which commonly chequer the subsequent progress of the malady. The character of those seizures might induce the practitioner to draw blood from the veins. Seldom, however, will this practice be found of any avail. The comatose symptoms are not often relieved by it, and I have more than once observed the worst consequences when this treatment had been energetically employed."

To "the indiscriminate use of mercury" he also strongly objects; though at the same time, in feeble and aged subjects he recommends, with some confidence, small doses of corrosive sublimate, which will "often act advantageously, without occasioning salivation or other sensible effects." On the other hand, he does not fail to observe that many cases will require tonics, stimulants, and a generous diet, despite our preconceived ideas of its pathology. And *third*, the treatment suitable to the confirmed disease. For this, we might suppose our utmost care unavailing; but the author (we think, too confidently) even here urges on our attention the capability of arresting the disease, and restoring the injured functions. Corrosive sublimate appears to be his sheet-anchor; but we confess we would rather have been presented with an abstract of the cases in which he found it useful, than with these assertions, however unhesitatingly given.

The section is wound up with a few remarks upon the use of iodine and Donovan's solution, which he considers objec-

tionable; arsenic and iron, which he has found serviceable; and opiates, the observations upon which deserve reflection:—

"There are circumstances which not only warrant the administration of an opiate, but where considerable relief is derived from this class of medicines. It must be confessed, however, that the cases are not easy to discriminate, where the practice would be beneficial or otherwise. Singular as it might appear, the remedy seems to be most appropriate to the cases where the cerebral structure is extensively disorganized. Sometimes, when stupor or coma is threatened, a small dose of morphine, or a few grains of Dover's powder, will ward off the attack. At an early stage of the disease, opiates are generally injurious, causing an aggravation of the symptoms that might continue for several days. Where it seems desirable to prescribe this remedy, the better plan is, to order it in small doses at first, until its effects in the individual case are ascertained."

With this quotation we close our analysis of the work. Our readers will observe that we have devoted more than usual space to a volume professing to be little more than a compilation; we have done so, however, for the purpose of drawing attention to the history and characters of an interesting disease, to which but little reference has been hitherto made in the pages of this Journal. Dr. Cheyne, of this city, published observations upon it so far back as 1827, which will be found in the fourth volume of the Dublin Hospital Reports. Since his time, with the exception of a few scattered cases which have appeared in our pathological records, and the original paper of Dr. Law, already referred to, we can point to no extended notice of this remarkable malady. We have, therefore, taken this opportunity of bringing it prominently under the consideration of our readers.

In the fulfilment of the task which Dr. Rowland has undertaken, we are of opinion that he has given a most complete and faithful exposition of the characters of ramollissement of the brain. It is not his fault that the diagnosis and the treatment are not more exact and certain; he has presented a clear *resumé* of the knowledge of the present day, and as such, the volume will form a most useful compendium for the consultation of that large section of the profession who have neither leisure nor opportunity to collect the information at its original sources. But further, there is a suggestive tone, and an original cast of thought apparent in many portions of the work, which may be turned to good account by the discriminating reader. There is much, very much, to learn before our knowledge of this disease becomes of practical value. We want an

abundance of fully recorded cases, such as Bennett has so ably commenced. Even a few hundred such as these might be data sufficient to supply the following desiderata:—

First. The relative frequency of the pathological causes.

Second. Their association with disease in other organs.

Third. Their diagnostic symptoms.

Fourth. The rational indications for treatment.

We trust, then, that Dr. Rowland will not be content with the issue of this *brochure*, however useful and creditable in its limited aim; but that he will follow up a task so well begun, until he shall ultimately arrive at effecting an original and material advancement in the successful management of so intractable a disease.

Surgical Anatomy. By JOSEPH MACLISE, Esq., Surgeon. London: Churchill. 1851. Folio.

THE last part of this important work has been recently issued from the Press, and in all respects fully equals its predecessors. We have before called the attention of both students and practitioners to the great advantage which Mr. Churchill has conferred on the profession in the issue, at such a moderate cost, of works so highly creditable in point of artistic execution and scientific merit,—thus placing within the reach of all what but a few years since were to be found only in our medical libraries, or in the collections of a few fortunate individuals. To all engaged in the study or practice of their profession, such a work as the "Surgical Anatomy" is almost indispensable. The provincial surgeon especially, often at a distance from a medical library, must have frequently felt the want of a work of authority for reference, when his long previously acquired anatomical knowledge began to have a certain hazy indecision, and want of confidence as to the precision of his recollections made him often unpleasantly anxious for the contingencies of an operation. The work of Mr. Maclise, which can be procured at an extremely moderate price, places in his hands the most lucid descriptions and accurate representations of the chief surgical regions, and we have no hesitation in saying, that it is as indispensable in the library of the country practitioner as it will be found welcome even in the collections of those who are within reach of the best supplied medical libraries of our larger cities.

To the surgical student Mr. Maclise has given exceedingly valuable assistance, but yet there are large opportunities for the further exercise of his talents, and great blanks still to be

supplied in the domain of illustrated medical literature. We have before directed the attention of this excellent artist to the requirements in the field of pathology; and to the enterprise of Mr. Churchill we would indicate this as a subject well worthy his consideration. The works of Cruveilhier and Carswell are, from their price, altogether beyond the reach of the student, and there are few even amongst professional men who can afford to have any of the highly illustrated works on pathology in their collection. We venture to say, that a series of pathological illustrations, exhibiting the more marked forms of disease, and accompanied by a letter-press description, would, if produced at the attractive price of the "Surgical Anatomy," command a very extensive circulation and a most successful career. In no department could a greater boon be conferred on the junior professional and student classes, who now manifest a growing taste for such studies.

The Descriptive and Surgical Anatomy of the Arteries, and the Relative Anatomy of the Veins and Nerves of the Human Body. By Joseph Henry Corbett, M. D., Professor of Anatomy and Physiology to the Apothecaries' Hall of Ireland, &c. Dublin: Fannin & Co. 1852. 8vo. pp. 353.

From an early period in the history of the Dublin School of Medicine it has been characterized, in a very marked manner, by a constant and unremitting attention to anatomical studies. Anatomy has been truly said to be the basis of all medicine, and we have no doubt that the eminently practical character which our School has acquired for clinical medicine and surgery is, to a very considerable extent, due to the circumstance, that descriptive anatomy has been, from the commencement, prosecuted amongst us earnestly and diligently. Other Schools have, no doubt, established higher claims in the cultivation of General Anatomy, and won new fame by the additions made to this department of science; but with the Dublin surgeon, in the vast majority of instances, his education has commenced with a rigorous course of practical anatomy, and the results have been shown in the practical tendency of his clinical surgical researches. Even scientific anatomy, however, has been very fairly represented in our contributions to medical literature; and while the excellent works of Colles, Harrison, Flood, and Power have so much facilitated the study of practical anatomy, not alone in our own schools, but also in those of England and Scotland,—and, we might add, of America, where they have always commanded a most respectable position and extensive

circulation,—the researches of Jacob, Alcock, Carlile, Houston, and Hart have acquired considerable repute in the departments of physiological and comparative anatomy. It is deeply to be regretted that the example of these, our pioneers in the field of original inquiry, has not stimulated others to follow in the track they have marked out. This is a proper place to state our belief, that peculiar conditions have existed, and do still exist, in all those Schools where the more abstract branches of medical science have been energetically cultivated. The chief of these conditions are, the stimulus to exertion and the prospect of reward for labour which the numerous prizes of other Schools supply,—we need only allude to the instances of London and Paris: in both these cities all the pressure which rivalry, ambition, and emulation can bring to bear has been exerted to foster and bring forward youthful talent, give it an indication of paths of research to be followed, and hold up the stimulus of reward, and the more honourable and not less exciting influence of emulated energy. With us there are not, and there have never been, such stimuli; and it is no unfair induction to say, that the consequence has been the small amount of original inquiry in those departments which, without such aids, hold out but little prospect of reward for labour. Sufficient instances have, however, occurred to demonstrate, in the most satisfactory manner, that the members of the Irish School are in every way qualified to pursue this as well as other departments of research with ability and success; and we indulge the hope that, before long, exertions will be made to direct inquiry, and give a stimulus to the unemployed energies of our junior brethren. The work of Dr. Corbett comes under the same category as the descriptive books of which we have spoken. In his Preface he states, that—

"The title of this book indicates the plan on which it is arranged; during its preparation the author's principal aim has been to fix the reader's attention to the immediate object of his study; to avoid all matters calculated to divert the current of his thoughts; to describe the relations of each artery in a systematic form; to dwell chiefly upon the points most important to be learned by the student, whether engaged in ordinary dissection or in preparation for his final examination. It is also intended that the reader, when tracing the arteries, should experience assistance in acquiring some knowledge of the accompanying veins and nerves, without additional labour or loss of time. The operations upon the arteries are placed in a separate chapter, and can be referred to by the student who desires to understand the leading features of each operation; but the details of surgical practice have been withheld, as inconsistent with the design of an anatomical work of this nature."

In the carrying out of this plan, the author has evinced considerable care, and an extremely judicious disposition of his matter. His style is easy, fluent, and well sustained; and the details of anatomical relations are given with order, clearness, and precision. In the account of the operations, we find, appended to each section which relates to the more important vessels, a short statement of the most noted occasions on which deligation has been performed. This is a useful and interesting addition, and will, no doubt, in many instances, induce the student to inquire more fully into the history of these operations,—a subject very much neglected.

The Structure and Functions of the Human Eye, &c. By Samuel Browne, R. N., M. R. C. S., Surgeon to the Belfast General Hospital and Ophthalmic Institution. Belfast: Agnew. 1852. 8vo. pp. 40.

At the request of a committee of the leading gentlemen of Belfast, Mr. Browne was induced to undertake the delivery of two popular lectures for the benefit of a charitable institution, and in the little *brochure* before us we find the result of his labours. In medical literature, at least, this is rather a novel cause for the publication of a book, but, as it appears to us, one not only perfectly legitimate, but in the highest degree creditable and honourable to the head and heart of the writer; and it is our conviction of this that has induced us to notice a publication which, otherwise, by reason of originality of thought or scientific merit, would not come within the scope of our duties as reviewers of medical literature to bring under the notice of the profession. We do so, however, because we think Dr. Browne's efforts in the cause of charity highly laudable; and also because we conceive that the popularization of certain professional subjects, especially those of the anatomical or physiological departments, is well calculated to disseminate more enlightened views amongst the public, and to fortify them against the assaults of quackery. Those most open to imposition of all kinds are confessedly the ignorant; and in using this term we would beg to say, that it applies not only to the so-called lower classes, but that even an archbishop or a judge may come within its signification as far as regards departments of knowledge foreign to his own calling or profession. Dr. Browne has certainly taken a lead in enlisting science on the side of charity; and we shall not be surprised to learn that henceforth the *Charity Lecture* is as fashionably attended as the *Charity Sermon*.

PART III.

MEDICAL MISCELLANY.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.

TWELFTH SESSION.—1851-52.

Ischuria Renalis; Urea in the Serum of the Ventricles of the Brain.—Dr. Banks detailed the particulars of a case of ischuria renalis which had recently come under his observation in Sir Patrick Dun's Hospital, and which, in some respects, resembled a remarkable instance of this disease which he had brought before the Society during the past session.

A woman, aged 60, was admitted into Sir Patrick Dun's Hospital on the 9th of March, having laboured under suppression of urine for four days. Dr. Head, who had seen her before her admission into hospital, had introduced a catheter, but without drawing off any urine from the bladder.

When she presented herself for admission she was evidently in a state which indicated approaching death. She complained of pain of a very severe character in the abdomen, and even the slightest pressure was productive of much uneasiness. She gradually fell into a comatose condition, and died in a few hours, death being preceded by convulsions.

Autopsy.—The bladder contained about an ounce of urine, which became almost solid on the application of heat. The kidneys were large and congested, weighing eight ounces each, but in other respects they did not present any morbid appearance.

On examining the brain, about an ounce of serum was found in each ventricle, which, upon being subjected to the ordinary analysis, yielded crystals of nitrate of urea.

The particulars of the case of suppression of urine which Dr. Banks detailed at a former meeting of the Society are already on record, and he would merely observe now, that in both instances life was prolonged to a greater extent than is usual when there is *com-*

plete suppression of urine, and that in both, also, urea was discovered in the serum of the ventricles of the brain.

It is well known, he remarked, that urea has been detected in the blood and other fluids under certain pathological conditions, in which the functions of the kidneys are not duly performed; but Dr. Banks was not aware that its existence in the serum of the ventricles of the brain had been actually demonstrated before the case which he had just alluded to. Urea had been found in the serum of the ventricles, in a case of hydrocephalus, by Dr. Bostock, and also by Dr. Maclagan in certain forms of fever. In conclusion, Dr. Banks observed, that in the present instance death had followed the usual train of symptoms, viz., coma and convulsions; but the example of the disease which he had before communicated afforded a remarkable exception to what may be considered the ordinary termination of this formidable affection.—*March* 22, 1851.

Aneurism of the Aorta.—Mr. O'Ferrall exhibited a specimen of aneurism of the aorta, taken from the body of a man, aged 33, who applied at St. Vincent's Hospital about eighteen months ago, complaining of nervousness and palpitations; he was remarkably anæmic, but not ill-nourished, being rather fat; he had neither cough nor dyspnœa; the pulse at each wrist was uniform in volume and in force, but in both had a peculiar vibrating feel, like a double pulse; the pulsations of the arteries at the root of the neck were visible, as also in the main arteries of the upper extremities. On examining the chest, a loud, double *bruit* was heard; the first was remarkably rough, and loudest at the middle of the sternum; the second was a similar murmur, prolonged and most distinct at the base of the heart, and a little to the left of the mesial line; both sounds were slightly audible at the back of the chest. The diagnosis given at this time was, that the aorta was dilated and rough, and that its valves permitted regurgitation. The patient improved under treatment so much that he was discharged from the hospital at the end of a fortnight, at his own request.

After an interval of fourteen months he returned for advice; he was now emaciated, had a most anxious countenance, great dyspnœa, and cough, which was so severe at night that he was obliged to remain sitting up in bed; the pulse was weaker than at the period of his first admission, but in other respects it continued as before; there were stridor, difficulty in swallowing solids, severe, shooting pain in the left shoulder, and the cough had a peculiar ringing character; with the exception of a slight shade of dulness about the middle of the sternum, the chest sounded clear; after he had been three days in hospital the dysphagia ceased, and the other symptoms were more or less relieved.

The diagnosis now given was, that the dilated aorta had become sacculated, and that the tumour arose from the anterior part of the vessel was rendered probable by the stridor, cough, and dysphagia; from the absence of permanent dysphagia, it was inferred that the tumour was small and placed in the middle line, and exerting its

pressure on the œsophagus only through the medium of the trachea; that the origins of the primary branches of the aorta were not implicated was evident from the pulse being equal in both wrists.

About three weeks ago the dyspnœa became so urgent that the patient was obliged to sit up in bed during the greater part of the night. One night, while in this position, he asked for a drink, but almost immediately laid down the cup and expired. Examination, *post mortem*, disclosed a small aneurism of the aorta, opening into the trachea; the latter tube was perforated by several small openings between the rings, giving it a cribriform appearance. The aorta was greatly dilated, and studded with calcareous deposits, which, no doubt, had originally a great share in causing the formation of the tumour. The heart was large; the left ventricle thickened; there was no lesion of the aortic valves, and their efficiency was tested by pouring water, and by blowing on them from the aorta; there was no evidence from dissection of a reflux current having been permitted during life, although the hypertrophy of the heart, and the general symptoms and physical signs, all taken together, leave very little doubt that such did occur.

Mr. O'Ferrall considered the case of interest, as being one of aneurism, diagnosed from symptoms rather than from physical signs; and also, because it was one of several cases which he had seen, in which, though symptoms and physical signs had, during life, led to the belief that a reflux current did exist in the aorta, yet, *post mortem* examination showed no permanent patency of the valves.—*November* 22, 1851.

Encephaloid Tumour in the Cerebellum.—Dr. M'Dowell exhibited a specimen and drawing of this disease, and gave the following history of the case:—A young man, a policeman, of temperate habits, was admitted into the Whitworth Hospital, November 1, complaining of pain in the back of his head, of a very peculiar character; it was exceedingly acute, and confined to the occipital region; it was also intermittent, occurring in severe paroxysms, during which he would roll himself in the bed, and call out to have his head pressed firmly; they recurred two or three times in the hour, lasting for about ten minutes each time; his manner had become altered; he sometimes raved at night, and endeavoured to leave his bed, but was at all times easily restrained; when free from pain he was perfectly rational; the bowels were torpid, the pulse slow, but the slightest exertion caused it to rise from 60 to 75; he had occasional vomiting, which, as it occurred with a moist tongue, and unaccompanied by epigastric tenderness, was considered to be sympathetic.

With respect to his previous history, it was stated that he had always enjoyed good health; but as long as he could remember, had been subject to pain in the back of the head, not acute, occurring for an hour or so each morning. About two months before his admission, however, it became very severe, and was of longer continuance at each attack; and, ten days before admission, it became so distressing that he was compelled to cease from duty.

The progress of the case was extremely rapid; on the fourth day after admission he had a slight febrile attack; his pupils were now observed to be dilated, and his hearing became wonderfully acute; there was no paralysis; and his intelligence was perfect, except during the height of the paroxysms of pain. On the fifth day erysipelas appeared on the left ear, and spread rapidly over the left side of the face; it was followed by most remarkable relief to the occipital pain; but there was, at the same time, great depression of the vital powers. On the sixth day, he became lethargic, and died in a state of coma in the evening.

Upon examination after death, there was discovered in the right lobe of the cerebellum a lobulated tumour, as large as a walnut; it was red and vascular on the surface, being covered by the pia mater; but internally it was of a greyish colour, and a fluid like whey escaped when it was cut into. It presented the character of encephaloid cancer. The surrounding substance of the cerebellum, with which the tumour was but loosely connected, was softened. The ventricles contained turbid serum in large quantity, and the entire brain was unusually vascular.

Dr. M'Dowell remarked that there were two points of especial interest in the case which he had just detailed, the first of which was the severe character of the pain, which, though dependent throughout on the presence of a malignant tumour within the skull, closely resembled an aggravated neuralgia. The occurrence of occipital headach in inflammatory affections of the cerebellum has been noticed by Andral, in his *Clinique Médicale.* The second remarkable circumstance was, the non-existence of malignant disease in any other organ or structure of the body. Dr. Hutton had, on a former occasion, shown a specimen of encephaloid tumours in the cerebrum and cerebellum, but malignant disease existed at the same time in other parts of the body.—*November* 22, 1851.

Disease of the Ankle and Tarsus.—Mr. Hamilton exhibited a specimen of anchylosis of the ankle-joint, combined with caries of the tarsal bones. The case was that of a man, aged 40, who had been admitted into the Richmond Hospital three weeks ago; the history and symptoms were those of ulceration, commencing in the cartilages. Three years and a half before, he was attacked with deep-seated pain in the joint, followed by swelling; two months afterwards an abscess formed and broke, and the opening became fistulous; a second appeared, and ran the same course; and at length a number of fistulous openings formed around the joint; the pain was at first occasional and dull, afterwards acute and constant; and startings of the limb frequently occurred at night. He became emaciated, and had profuse night perspirations. The foot was permanently extended, and no motion could be communicated to the ankle-joint; but although anchylosis had evidently taken place here, active disease was still going on in the tarsus; a probe passed through the fistulous apertures came in contact with loose portions of carious bone. The severity of the pain, and the rapid progress of the hectic

fever, rendered it necessary to amputate the limb: the operation was performed about a fortnight since.

The dissection of the limb showed that the process of true anchylosis had been completed between the tibia and the astragulus, and also between the former bone and the fibula; the lower portion of the shaft of the tibia was much enlarged. In the tarsal region there was a large suppurating cavity formed by the destruction of the navicular, and middle and external cuneiform bones, fragments of which lay loose in the abscess.

Mr. Hamilton observed that this was the third instance in which, after anchylosis had taken place, he had been obliged, nevertheless, to have recourse to amputation: in the two other cases the knee was the articulation implicated; in one, false anchylosis had taken place, but a fresh suppurative inflammation ensued, upon an accidental injury; in the other, the union was by bone; but twenty years after the date of the original disease an abscess formed in the bone, the constitutional effects of which rendered amputation necessary.—*November* 29, 1851.

Adhesive Phlebitis.—After referring to his published observations on the connexion between this affection and dysentery[a], Dr. Mayne exhibited a specimen of adhesive phlebitis of the veins of the upper extremity. The case was that of a man, aged 29, who had been in hospital in February last, labouring under symptoms of incipient phthisis. After a few weeks he left the hospital, and returned to his business; he was very soon, however, seized with a severe bowel complaint, supposed by himself to be dysentery, and which persisted up to last October, when he again placed himself under Dr. Mayne's care, in consequence of the sudden supervention of pain and swelling in the right upper extremity; the pain, commencing behind the clavicle, and in the corresponding shoulder, was soon followed by œdematous tumefaction of the entire limb, which was hot, painful to the touch, and pitted imperfectly upon pressure. The deep-seated veins could be traced, hard and cord-like, under the integuments, and the superficial veins about the shoulder, the axilla, and the arm, were largely dilated, and by their blue colour and varicose appearance, at once attracted the attention of the observer. (A very faithful representation of these appearances, by Mr. Connolly, was exhibited to the Society.) For the few days during which the man survived, the bowel irritation seemed to supersede the chest symptoms. The stools, which were as many as from twelve to twenty in the twenty-four hours, were of an ochry character, and insupportably offensive.

At the *post mortem* examination, both lungs were found filled with tubercles, but there was no cavity of any extent in either. All the veins of the right upper extremity were filled with firm coagula, which adhered to the lining membrane, and retained a considerable portion of the colouring matter of the blood. These coagula, when removed from the veins, resembled portions of coral. The coats of

[a] Dublin Quarterly Journal of Medical Science, New Series, vol. x. p. 352.

the veins were thickened and opaque. These diseased appearances extended as far as the junction of the two venæ innominatæ; the right vena innominata was quite impervious, while the left, the superior cava, and the azygos, were free from any trace of inflammation. The examination of the small intestines was accidentally omitted, but the large intestines exhibited the appearances usually observed in the advanced stage of chronic dysentery; the mucous membrane was covered with ulcers, many of which in the rectum and sigmoid flexure of the colon were circular, with depressed centres and indurated margins.

Dr. Mayne expressed his inability to account satisfactorily for the disease of the veins in this instance. The combination of adhesive phlebitis with phthisis is so very uncommon, that it would not be justifiable to consider it in this case as connected with the pulmonary disease. Was it an example of idiopathic inflammation, or dependent upon the dysenteric affection? Dr. Lee has dwelt strongly upon the effects of pus in causing coagulation of the blood, and appears to lean to the opinion, that the coagula contained in veins suffering from adhesive inflammation may be produced by pus arriving at the veins in the course of the circulation.—*November* 29, 1851.

Fracture of the Tibia and Fibula.—Professor R. W. Smith exhibited a specimen of fracture of both bones of the leg, close to the ankle-joint, which had been presented to him by his friend Dr. Wade, who was acting as house-surgeon to the Derbyshire Infirmary when the accident occurred. The following was the history of the case:—A boy, aged 9, was severely injured on the 28th of August, 1851, by a portion of a wall falling upon his left leg; there was a large and deep wound, from which arterial blood flowed freely, inflicted upon the front of the limb, about two inches above the ankle-joint; a loose piece of bone could be felt in the bottom of the wound; and at its lower extremity (which reached to within an inch of the flexure of the joint), an osseous projection, covered by the extensor tendons, was discovered, and supposed to have been a portion of the astragulus. The fracture of the tibia was comminuted. At the seat of the injury the limb was increased in breadth; the leg was shortened, and the foot inverted. When the limb was raised, by taking hold of it at the knee, the foot was observed to retain the position already mentioned, from which the inference was drawn, that the fibula was uninjured.

In consequence of the injury which the soft parts had sustained, the exposure of the tendons, and the fracture of the tibia being comminuted and compound, it was determined upon by the surgeons of the Infirmary to amputate the limb, which was accordingly done in the usual manner.

The examination of the amputated limb showed the lower epiphysis detached from the tibia, and the bone immediately above it broken; a large triangular portion of it was detached, and several fractures extended upwards for two or three inches; into one of these longitudinal fissures some muscular fibres had been wedged.

With respect to the fibula, Dr. Wade stated, in his account of the dissection, that it was *partially* broken, about two inches above its lower extremity, and bent so as to present a convexity externally, and a concavity towards the tibia: this curve it retained even after maceration. Upon closely examining the specimen, however, it will be seen that, although the bone still retains this curved form, the fracture is *complete*, and as manifest upon the side of the concavity as upon that of the convexity: in the latter direction there is fracture, with separation of the fragments; in the former, fracture, with forcible approximation of the extremities of the fragments, the osseous fibres of which in this situation seem to be, as it were, dovetailed into each other, forming a kind of suture, of a most minute and delicate character, it is true, but sufficiently firm to enable the bone to maintain, even after maceration, the curved form imparted to it by the injury.

Professor Smith observed that, although he did not wish to be understood as denying the possibility of the occurrence of an incomplete fracture in early life, yet he was of opinion that in the great majority of cases of so-called partial fracture, the lesion of the bone was complete, and similar in its nature to that so well exemplified in the specimen which he had just exhibited to the Society; and that in these cases the bone retained its curved form, not in consequence of the osseous fibres upon the side of the concavity remaining unbroken, but from their becoming mutually impacted, and assuming a suture-like arrangement. It was possible, also, that the maintenance of the curve might be still further assisted by the animal matter of the bone remaining entire, although the osseous fibres may have yielded to the force, as happened in a case recorded by Wilson, in which he had an opportunity of examining the bone twelve hours after the receipt of the injury. The principal evidence adduced in support of the doctrine of partial fracture is derived from the symptoms noticed during life, in cases supposed to be examples of such an injury, namely, the curved form of the injured limb, the permanency of the curve, the force generally required to efface it, and the snapping noise heard at the moment when the limb resumes its normal form; but if it be true that the specimen just exhibited to the Society represents what usually occurs, and that the osseous fibres upon the side of the concavity are forcibly wedged together, there is no difficulty in explaining the persistence of the curve, or in accounting for the cracking noise heard when the bone is forcibly straightened.

Another description of evidence upon which the doctrine rests is derived from the *post mortem* examination of the bones, many years after consolidation has taken place, as in the cases recorded by Campre, Bonn, and others; evidence, however, of this nature is necessarily inconclusive; it being impossible to establish the doctrine in question, except by the examination of recent specimens.—*December* 6, 1851.

Recent Endocarditis (*Rheumatic.*)—Dr. M'Dowell exhibited a specimen of acute inflammation of the heart supervening on chronic

disease. The case was that of a boy, aged 15, who was admitted into the Whitworth Hospital, on the 4th of September last, labouring under an attack of acute rheumatism. It was his first attack, but four years previously he had fever, since which he was said to have frequently complained of palpitations. On admission, he had not only rheumatic fever, but also rheumatic carditis. There was a friction sound to be heard over the heart, and also a bellows murmur, showing that both the external and internal serous membranes were inflamed: there was very little liquid effusion. The friction sound became gradually less distinct, and finally ceased to be heard on the 20th of October. It was last heard over the apex of the heart. On its subsidence, the endocardial murmur could be more satisfactorily examined. It was a loud, systolic, bellows murmur, audible over the entire of the præcordial region, but loudest at the apex of the heart. It was also distinctly heard over the base of the organ, and extended as far as the centre of the sternum. Its existence at the apex of the heart was regarded as an indication of the presence of regurgitant disease of the mitral valves, while the sternal *bruit*, which also accompanied the first cardiac sound, and was propagated along the sternum, might, it was thought, be referred to anæmia, or to an impaired condition of the blood itself, a supposition which the appearance of the patient rendered probable. The amount of dulness which remained after adhesion of the pericardium had taken place denoted that there were hypertrophy and enlargement of the heart. From the time of the accession of carditis the patient lived six weeks; ultimately he became dropsical, and died, worn out with dyspnœa and all the distressing symptoms attending the termination of extensive disease of the heart.

Autopsy.—The pericardium was everywhere adherent, except over a small portion of the apex of the heart. There was considerable hypertrophy, particularly of the walls of the left ventricle. The left auriculo-ventricular orifice was so narrow as to admit the point of one finger only, and the mitral valves were thickened. These appearances, Dr. M'Dowell believed, were owing to a morbid change antecedent to the last illness, which began but six weeks ago. The results of the final attack of endocarditis were seen in the presence of recently deposited lymph on the mitral and aortic valves: it appeared under a beaded form, giving a delicate fringed edging to the valves. On the aortic valves, it was more copiously deposited, forming a thick layer on the opposed surfaces. This, so far from rendering them inadequate, seemed to have the effect of making them meet more closely. Hence, none of the signs of aortic patency were present; but as the lymph on the aortic valves offered a slight obstacle to the free flow of the blood from the ventricle, a *bruit* was generated, which was systolic, and propagated upwards along the aorta. Recent lymph, in small quantity, was also effused on the tricuspid valves.

The chief points of interest in the case were, as Dr. M'Dowell conceived:—first, the occurrence of the cardiac affection prior to the rheumatic inflammation of the joints;—secondly, the short time in

which the recent attack of endocarditis proved fatal, when grafted on pre-existing valvular disease; and thirdly, that an organic affection of the aortic valves was attended with the same physical signs as those which usually denote an anæmic condition of the system only. —*December* 6, 1851.

Chronic Cystitis; Renal Disease; Calculus in the Bladder.—Mr. O'Ferrall exhibited the recent parts in this case, and having remarked upon the difficulty which the surgeon often experienced in coming to a conclusion as to the propriety of operating in cases of stone in the bladder, gave the following history of the disease in this instance:—A patient was admitted under his care, into St. Vincent's Hospital, with calculus in the bladder; the specific gravity of the urine was 1026; it contained a large quantity of albumen, together with blood and purulent matter; the urine itself was highly alkaline. These symptoms rendered probable the existence of cystitis with chronic nephritis; a good deal of the albumen was most likely derived from the blood and other foreign matters in the urine. Under treatment, the general health of the patient improved, and a second examination of the urine having been made, the albumen was found to have decreased much in quantity. Subsequent examinations gave very unequal results; but at length the urine became acid, and, when allowed to rest, deposited pus in small quantity, while the albumen was further diminished.

The question arose as to the propriety of operating now, and for several days the patient's fitness for undergoing the operation seemed to increase, when again the urine became alkaline, and pus, in large quantity, was deposited; in a few days, however, this unfavourable change ceased, but the improvement was of very short duration, and the urine resumed its former character. Its specific gravity always continued high. The results of each examination of the urine were so unequal, that no conclusion could be arrived at, as regarded the performance of lithotomy.

At length, the patient was attacked with peritoneal inflammation, which commenced in the left iliac fossa, and proved fatal in three days. The treatment adopted was as active as the strength would admit, but he derived most benefit from the free use of opium.

Autopsy.—A quantity of recently effused lymph was found in the left iliac fossa, extending thence to the transverse arch of the colon, and causing adhesion of the folds of the intestines. In the areolar structure of the iliac fossa, also, there was a deposit of purulent matter, which communicated, by a small, fistulous canal, with another purulent collection placed higher up. There was a third abscess surrounding the greater portion of the left kidney, the capsule of which was perforated by numerous small openings, which led into several other small, purulent collections. The kidney itself was much enlarged, and its cortical structure, in a great measure, absorbed. The ureter was greatly dilated for about two inches in extent; it then became contracted and tortuous, and its coats were

much thickened, when it again became larger, but not so wide as at its commencement. Here, then, was a stricture of the ureter.

The bladder presented the usual anatomical characters of chronic cystitis, and contained a large, oval calculus; the surface of which was composed of phosphates. The right kidney was quite healthy.

Mr. O'Ferrall remarked, that in this case there had been not only an intermission in the alkaline condition of the urine, but also frequent changes in the chemical constitution of that fluid. In all such cases, there is a difficulty in arriving at a correct diagnosis. Most probably, what occurred here was, that the morbid secretion being from time to time arrested at the contracted portion of the ureter, and thrown back, as it were, on the abscesses connected with the kidney, the urine which was voided came from the right kidney, the abnormal products in it, upon these occasions, not being more than could be fully accounted for by the amount of cystitis which was found to exist; but when, from relaxation, cessation of spasmodic action, or other cause, the contracted ureter allowed the flow of matter, &c., from the left kidney, the examination of the urine then gave evidence of the extensive organic mischief, already mentioned.

The case showed, in Mr. O'Ferrall's opinion, that the operation for stone should not be undertaken, nor, on the other hand, declined after one, two, or even three examinations of the urine.

Another conclusion might, Mr. O'Ferrall said, be fairly drawn from this case, viz., that when a patient dies shortly after the operation for stone, and we find, upon dissection, appearances, as here, resembling diffuse inflammation, we should be cautious in ascribing them to the operation. Had this man been operated upon, he would, most probably, have got a severe rigor and died in twenty-four hours; and the morbid appearances now enumerated would, without doubt, have been ascribed to the operation.—*December 6th*, 1851.

Aneurism of the Thoracic Aorta.—Dr. M'Dowell exhibited a specimen of aortic aneurism, taken from the body of a man aged 38; he had been a car-driver, and of very intemperate habits. About seven years ago, in consequence of a fall, he had received a severe bruise and concussion of the chest, but he considered himself perfectly recovered long since from all the effects of this accident. Early in November last he had a slight attack of fever, for which he was admitted into the Hardwicke hospital; in ten days he was considered convalescent. He now complained of pains between his shoulders, and an uneasy, aching sensation and stitches through his chest. A careful examination having been made, it was found that he had well-marked physical signs of aortic aneurism. There was perfect dulness on percussion over the upper part of the sternum, and extending across the cartilages of the true ribs, especially upon the left side. Between this dull portion of the chest and the naturally dull cardiac region below, there was a well-defined belt of

clearness. There was a strong impulse perceptible over the whole of the dull region above; when viewed sideways a heaving motion of the upper part of the sternum became evident, especially during the acts of expiration.

In the same region, a bellows murmur was heard at all times, but not always over the entire of it; it was frequently limited to the left side, and to a point corresponding to the junction of the second rib with the sternum. There was no venous turgescence in the neck; no cough, dyspnœa, or alteration of voice. There was a slight degree of dysphagia, which, however, had existed for only nine days previous to the admission of the patient into the hospital; he made no allusion to it until questioned; it continued until he died.

He was about a fortnight under observation, when, upon the 4th of December, he said he was better than he had been for some time; on that evening, however, and on the following day, he expectorated a slight quantity of blood; and upon Saturday evening he was suddenly seized with violent cough, and, exclaiming "that is the last cough I will ever give," instantaneously expired.

Autopsy.—The cavity of the left pleura was filled with coagula of blood, which weighed four pounds. The heart was forced across to the right of the sternum, and rotated upon itself, its posterior surface being directed forwards. A large aneurismal tumour occupied the upper part of the anterior mediastinum; it arose from the front of the aorta, just where the ascending and transverse portions of the arch join; it extended downwards and towards the left side, and bulged into the upper part of the pericardium; reached upwards to the vena innominata, and lay in front of the root of the left lung, to the upper lobe of which it had become adherent. It here burst into the pulmonary structure, and finally into the cavity of the left pleura, by a large aperture in that membrane, which was extensively detached from the back of the lung.

It will be seen that the position and size of the tumour are in accordance with the physical signs noticed during life, but the dysphagia remains to be accounted for. The tumour being remote from the œsophagus, it was difficult to account for the symptom in question, until the descending aorta was examined. This portion of the vessel was found to be extensively diseased, being covered with atheromatous depositions, and about three and a half or four inches from its commencement, a small aneurismal tumour was discovered, just at the first point of contact between the œsophagus and the thoracic aorta; when the parts were placed *in situ*, it was manifest that this small tumour must have pressed upon the œsophagus; this was the only direct relation which it had; it was, therefore easy to conceive that if this had been the only aneurism present in this case, dysphagia would have been the only symptom of the disease. When such cases occur, they have the usual signs of stricture of the œsophagus; and under such circumstances the incautious use of a probang has been followed, on the instant, by fatal consequences. —*December* 13, 1851.

Congenital Luxations of the Radius.—Professor R. W. Smith laid before the meeting a series of casts, drawings, and preparations, illustrating the various forms of congenital luxations of the upper extremity of the radius, as far as they were at present known, and made the following explanatory observations:

The subject of congenital luxations of the head of the radius has, of late years, received from pathologists, more especially in this country, a considerable share of attention; and communications have been made to this Society from time to time, descriptive of some of the forms of these peculiar malformations. Dupuytren[a] appears to have the merit of being the first to notice the original luxation of the radius, having met with an example of double luxation backwards and upwards; the appearances were precisely the same in each elbow-joint. Cruveilhier[b] has delineated the bones of the fore-arm in a case of the same description; but he does not consider either this or the instance recorded by Dupuytren to be the result of original malformation, being persuaded that they should be looked upon as luxations, the result of accident, and left unreduced. A similar explanation has been given by Sandifort[c] of a case of luxation backwards, delineated in the "Museum Anatomicum."

In 1840, Mr. Adams exhibited to this Society a cast of the luxation upwards and outwards; and in 1849, a nother of the luxation backwards and upwards. All the cases, however, to which I have alluded, labour under this disadvantage—that some are deficient in the history during life, while in others the *post mortem* examination is wanting. In 1850, I brought before the Society a specimen of the congenital luxation forwards, which, I believe, was the first instance in which observations on the living were combined with anatomical investigation, and both sources of information brought to bear upon the subject; and I have to-day to exhibit another example of congenital luxation of the radius, to which also the advantage attaches of having been carefully observed during the life of the individual.

In this instance, the position of the fore-arm was similar to that noticed in the case of luxation forwards; it was flexed at a right angle, with the hand midway between pronation and supination; it could be slightly extended; but whenever an attempt was made to bend it beyond a right angle, the motion was at once arrested by the anterior margin of the lower end of the humerus, s triking against the neck of the radius; neither pronation nor supination could be performed fully, but a greater amount of the latter motion was permitted than of the former. The head of the radius could not be felt during any of the motions, or in any position of the articulation. The elbow-joint was singularly deformed; the condyles of the humerus projected to a considerable distance upon either side of the articulation; the external was remarkably prominent, curved inwards and forwards, and elongated, descending in the semiflexed position of the joint below

[a] Diseases and Injuries of the Bones. Sydenham Society.
[b] Livr. ix. [c] Tab. ciii.

the level of the olecranon process, and passing that of the inner condyle by at least three-quarters of an inch. The fore-arm was short, compared with the length of the arm, and the shaft of the ulna terminated an inch above the radio-carpal articulation.

The man stated that the deformity had existed from his earliest recollection, and that he did not remember having sustained any injury of the joint. He died of a chronic affection of the lungs, and a careful dissection was then made of the malformed limb.

There was no capitulum upon the humerus, and but a very imperfectly formed trochlea, which was separated from the outer condyle by a large, deep, glenoid-shaped cavity, the surface of which was smooth and polished like ivory; it was formed principally at the expense of the outer condyle, which presented the elongated and curved form already described; the long or vertical diameter of this excavation was an inch and a quarter in length; it formed a polished socket, which lodged the equally polished, but deformed head of the radius, which, as in the case of congenital luxation forwards, which I exhibited upon a former occasion, was applied by an irregularly flattened surface to the lesser sigmoid cavity of the ulna.

Both bones of the fore-arm were of equal length above; but the ulna terminated an inch above the wrist; from its atrophoid lower extremity a strong ligamentous structure passed down to be attached to the lower end of the radius and to the cuneiform bone.

The absence of the capitulum of the humerus, the short fore-arm, the radius and ulna being of equal length superiorly, the arrest in the development of the lower end of the ulna, and the history of the case, constitute sufficient evidence of the congenital nature of the malformation in this instance, which is to be looked upon as a form of original luxation of the head of the radius, now for the first time described, as far as I have been able to ascertain; it is a displacement of the head of the radius directly upwards, or longitudinally with respect to the humerus.

Professor Smith next drew attention to a cast of the upper extremity, showing another form of congenital luxation, in which the upper end of the radius was displaced laterally and outwards; it resembled the two cases which he had already described, namely, the luxation forwards and that upwards, in the semiflexed position of the fore-arm, the semipronated hand, the arched form of the bones, the loss of the normal relation as to length between the radius and the ulna, the alteration in the form of the head of the radius, and the arrested development of the ulna, which ceased an inch above the wrist.

The patient, an adult male, and of weak intellect, stated that the joint had never been the subject either of accident or disease. He died of phthisis, in Sir Patrick Dun's Hospital; but an unfortunate train of circumstances occurred, which prevented the examination of the limb. This, however, is the less to be regretted, as ample opportunities had been afforded of establishing the nature of the deformity, the man having been for a long time under Professor Smith's

care, in the Richmond Hospital; and he was so emaciated that there was no difficulty in ascertaining the condition and relations of the bones.

The radius descended an inch below the ulna, and above far surpassed it in length; it was nine inches in length, while the ulna was only six; its upper extremity was separated from the olecranon by an interval of at least two inches; the olecranon occupied its normal position with respect to the humerus; but the radius passed upwards and outwards in such a manner that that portion of its shaft corresponding to the tuberosity rested upon the external surface of the shaft of the humerus; the head of the bone was of a flattened, oval form; and the lower end of the humerus had no capitulum. The skeleton of this man presented examples of original malformations of the opposite upper extremity, and of both lower extremities. This was the second instance of congenital lateral luxation outwards of the upper end of the radius, which Professor Smith had seen. The appearances were precisely similar in each case.

A series of casts and drawings were next exhibited, illustrating congenital luxations backwards and upwards; two of the casts represented the right and left arm of an individual in whom the displacement was double, as in the case recorded by Dupuytren; in both of these the upper end of the radius was on a level with the summit of the olecranon; while in a third the head of the radius passed the level of that process; in all, the lower extremities of the bones preserved their normal relative length.

Upon reviewing the history of the casts and preparations which were now placed before the Society, it would be seen, Professor Smith observed, that there was one character common to them all, namely, that, no matter in what direction the displacement of the head of the radius might have occurred, in every instance the capitulum of the humerus was either partially or altogether deficient. It appeared reasonable, therefore, to consider this arrest of development as the primary lesion, the essential character of all these malformations of the radio-humeral articulation. The abnormal length of the upper end of the radius was, most probably, consequent upon this malformation of the humerus, and was another feature which almost all these cases presented in common.

The following table gives the varieties of congenital luxation of the head of the radius hitherto observed, and the names of the authors who have noticed them.

Backwards.—Sandifort.
Backwards and upwards, upon both sides.—Dupuytren, Smith.
Backwards and upwards, upon one side.—Cruveilhier, Adams, Nelaton, Smith.
Forwards and upwards.—Adams.
Forwards.—Smith.
Laterally outwards.—Smith.
Upwards.—Smith.

—*December* 20, 1851.

Aneurism of the Thoracic Aorta.—Dr. Mayne presented a specimen of aneurism arising from the front of the transverse portion of the arch of the aorta, and extending over to the left side. The patient, a man aged about 45, had been for a year and a half under observation in hospital; he had been a law-clerk, but not over-worked; never had syphilis, nor ever taken mercury. About two years ago (in October, 1849), he was rather suddenly seized with dyspnœa and pains, which were of a rheumatic character.

In June, 1850, when Dr. Mayne first saw him, he was complaining of severe cough, of a peculiar hoarse, raucous character, which gave the idea that the man was suffering from disease of the larynx, but, on examination, no other symptom of laryngeal disease could be detected. The voice was natural. He also complained of pain of a neuralgic character in the left shoulder, shooting to the acromion and along the superior intercostal spaces; it was intermittent, but never completely disappeared. In addition he had dyspnœa, which, scarcely perceptible when he was tranquil, became distressing whenever he was hurried or ascended a height. He was sensible of a continued obstruction about the windpipe, and pointed to the upper part of the sternum as the seat of the affection. The pulse was similar in strength and character in both radial, brachial, and carotid arteries. There was no turgescence of the jugular or of the other veins in the neck.

The action of the heart was regular, and without any abnormal sound. At the upper third of the sternum there was dulness, which extended over the costal cartilages on either side for about two square inches; there was no *soufflet* here, but two sounds were heard as in the heart, and a little later than these in point of time. There was an impulse, which was single, but stronger than that of the heart; both impulse and sounds diminished as the stethoscope was moved towards the heart, and again increased in the true præcordial region. Both sides of the chest were equally resonant on percussion, but the respiration in the upper part of the left lung was more or less bronchial both in front and posteriorly, and at the base of the lung it was not at all so clear as the resonance on percussion would have led him to expect. After some months the tumour in the upper sternal region became much more decided; it was visibly pulsatile, and the seat of a constant, dull pain. The pulsation was diastolic. The note taken in November of the same year was, that the pulse and double sound continued, and that there was no *soufflet.*

He was again carefully examined in April, 1851, when it was found that the left side of the chest had become smaller than the right; the ribs seemed crowded together, and the whole side contracted, very like what takes place after the absorption of a pleuritic effusion. The contraction continued to increase; in August the affected side was less than the opposite by two inches; and shortly before death the difference had increased to three inches. In October it was noticed that the left side had also become contracted in the

vertical direction; the shoulder had advanced, and the angle of the scapula had started from the side. The right side was preternaturally clear on percussion; the left was also clear, but there was a slight shade of difference between the two in this respect. In addition there was no true respiratory murmur to be heard in the left lung, except at its most inferior portion; at the upper part, both in front and posteriorly, it was bronchial or tracheal, and there was well-marked resonance of the voice. The heart was now displaced towards the left axilla. There were, in fact, all the appearances usually observed after the absorption of a large pleuritic effusion of the left side; yet of this disease he had none of the general symptoms, neither had he those of cirrhosis of the lung. The conclusion, therefore, arrived at was, that the left bronchus was compressed by the aneurismal tumour.

There was never any hemorrhage, but the tumour gradually approached the surface, and the integuments became thin and discoloured, and sloughing seemed at hand; he died, however, without the sac having given way either externally or internally.

Autopsy.—The aneurism was found to have arisen from the ascending portion of the thoracic aorta, before the giving off of any of the great vessels; it was double the size of an orange, and had caused absorption of the sternum and of portions of the costal cartilages upon either side. It had extended downwards towards the left lung, compressing and flattening the left bronchial tube. There was a slight and recent pleuritic effusion on the surface of the left lung. The mucous membrane of the œsophagus was ulcerated in two or three spots. There had been no dysphagia; but towards the close of the case the man had complained of pain in swallowing solids. The aortic valves were healthy.—*December* 20, 1851.

Abscesses in the Brain.—Dr. Gordon exhibited a specimen of very extensive disease of the brain. The subject of the case was a strong labouring boy, sixteen years of age, who was under observation for one week only before his death. On the 6th of December he was sent to the Hardwicke Hospital, as being affected with fever. Dr. Gordon saw him on the following morning, and his attention was at once drawn to the position in which he lay in bed: his head was drawn back, and the body arched forwards. There was great rigidity of the muscles of the neck, but no alteration of sensibility. The temperature of the entire body was higher than natural; the skin was also very dry. He had raved during the previous night, but his intelligence was now perfect; he said he had felt generally unwell for the last seven days, and two days ago was obliged to give up work in consequence of severe headach. The pain in the head was now most intense; it was strictly limited to the occipital region, and was constant, but was not increased by pressure or motion. His pulse was 100, and small; he had vomiting, without any epigastric tenderness. His tongue was white and moist; the pupils were irregular, and did not contract under a strong light. He was treated for meningeal inflammation, but symptoms of coma very rapidly set in; from these

there were two distinct intermissions, each of about eighteen hours' duration, when he again complained loudly of the pain in the occiput. He had constant gay delirium; but was perfectly rational when spoken to. For twenty hours before his death, which occurred early on the 11th, the coma was profound.

Autopsy.—On removing the calvarium and dura mater, the upper surface of the brain seemed perfectly healthy, excepting that the pia mater was a little more vascular than natural; but on raising up the brain from the base of the skull there was found a large quantity of greenish-yellow lymph, completely covering the pons varolii and the top of the medulla oblongata, and extending for a very short way along the spinal cord. On lifting up the brain a small abscess, which was situated in the right middle lobe, near the surface, gave way; it contained about an ounce of thick, greenish, purulent matter; the dura mater corresponding to it was perfectly healthy; there was no disease of the bones of the head.

On further examination of the brain, it was found that it contained five distinct abscesses: they were situated, one in the anterior lobe of the right hemisphere; one in the middle lobe (before mentioned); and three in the left hemisphere. One of these was in the posterior lobe; the remaining two near the convex surface.

These abscesses were all well-defined and encysted; the lining membrane being exceedingly thin, but very distinct and vascular; the matter contained in them was thick, and of a very dark olive-green colour. The cerebral substance surrounding them was slightly softened; the abscess in the anterior lobe of the right hemisphere had burst into the lateral ventricle. The cerebellum was not diseased.

Dr. Gordon thought that the case afforded a good example of the extent to which disease might advance in the brain without giving rise to urgent symptoms. Those which did exist were, in his opinion, owing to the meningeal inflammation which was present at the base of the brain, and to the matter making its way into the cavity of the ventricle.

Dr. Gordon referred to two cases related by Abercrombie, where the symptoms of cerebral disease were apparent for only three days before death. In one, a man aged 43, three abscesses were found in the brain, one of which had burst into the left lateral ventricle. In the brain of the other, five distinct abscesses were found. Dr. Abercrombie refers to two cases recorded by Morgagni and Dr. Powel, in each of which a large abscess was found in the brain; and yet in neither of these instances had there been during life any symptom of cerebral disease. And lastly, Dr. Gordon quoted from the case-book of the Hardwicke Fever Hospital the following case, which occurred under the care of the late Dr. Crampton, and which he had himself closely observed during life and examined after death:—

A strong, healthy-looking labourer, aged 23, was admitted into the Hardwicke Fever Hospital, August 1, 1839. He had always

enjoyed perfect health until the present time. He was seized, a few days before admission, with the usual premonitory signs of fever,—which, however, soon passed off, and he was transferred to the convalescent ward on the 6th. He remained in bed on the 7th, complaining of numbness in his right arm; on examination, it was found to be completely paralysed. The sensation remained perfect. There was scarcely any constitutional disturbance; his pulse was slow. On the 9th he became comatose; his pulse 46 in the minute; he died on the night of the 11th; and upon examination after death, there was found slight serous effusion into the cavity of the arachnoid, and great vascularity of the pia mater. In removing the brain, a quantity of pus flowed out from an abscess in the anterior lobe of the left hemisphere. There were eight distinct abscesses in the cerebrum; they all contained a quantity of greenish sero-purulent matter, and varied in size from that of a large walnut to a small hazel-nut. They were all lined by a thin vascular membrane; the left lateral ventricle was filled with matter from an abscess in the posterior lobe having burst into it. The cerebellum and bones of the skull were healthy. Two of the abscesses were situated in the anterior, and one in the middle lobe of the left hemisphere. The right hemisphere contained two in the anterior, and two in the middle lobe; they were all in the substance of the brain, near its convex surface.—*December* 20, 1851.

Cases from Practice, with Observations. By S. Browne, Esq., R. N., M. R. C. S. E., Surgeon to the Belfast General Hospital, and the Ophthalmic Institution.

Case I. *Case of Cleft Palate*[a].—Among the many congenital defects to which mankind is liable, that of cleft or fissured palate is not the most unfrequent, nor the least distressing. The imperfection materially affects two of the functions of life,—one of daily necessary action, namely, deglutition; the other required to maintain our social relations, viz. articulation. Both of these actions require a perfect condition of that part of the mouth named "velum palati," or soft palate; for when this structure is either absent at birth, or is destroyed by disease, swallowing the food is often a most distressing necessity, and speech is so deformed, if I may use the expression, that the unhappy subject of the defect is no less startled by his own discordant sounds than the listener is pained to hear the abortive attempt. This, unlike some other congenital or acquired imperfections, cannot be concealed, or the functions with which it interferes be kept in abeyance, but daily, almost hourly, reminds the poor sufferer that he is a disagreeable member of society. Fortunately, the

[a] Read before the Belfast Medical Society.

resources of modern surgery have found a remedy, and offer an almost certain means of either alleviating or doing away with a deplorable affliction; and this knowledge should impart consolation to the sufferer and his friends, when it is known that he need not necessarily remain the subject of a defect once regarded as irremediable.

The operation for cleft palate, "staphyloraphy" or "velo synthesis" as it has been named, is one of the triumphs of surgery, many of which our age has happily witnessed, and for which the world is indebted to bold and scientific practitioners. Within the last few years the operation in question has been much improved by the genius of Professor W. Fergusson and others, and has been repeatedly performed with complete success on the Continent, in America, and in this Kingdom. The following case, which I think presents some novelty, is that of a female, the daughter of a respectable farmer in the county of Down; she is twenty-four years of age, and is now in perfect health, although in early life she was the subject of a very severe strumous affection. I believe her relatives never imagined there was any probability of having the defect under which she laboured remedied, until a professional friend in Belfast submitted her for my opinion, when I at once advised the operation which I afterwards performed. The steps of that operation I shall presently detail, premising that they who have either witnessed a similar operation, or have read the cases published, will not perceive that I have departed from the usual method pursued, save in two respects, and these I hope I shall not be considered presumptuous if I deem improvements. In the first place it is essentially important that the patient about to be operated on should be most anxious for the undertaking, firm, and resolved to second the efforts of the surgeon in every way, and prepared for a tedious and distressing operation. In these respects I was most fortunate in my patient, for greater determination in the prospect of the proceeding, and sustained resolution throughout, could not possibly have been exhibited, and I must bear testimony to her possession of courage and strength of mind I have never seen surpassed. Besides having a patient with the qualities just mentioned, it is necessary to see that all the functions are in healthy action, and that the natural strength is brought up to as high a standard as the individual case will admit. I think the patient should be under observation for ten days or a fortnight, during which time a species of training should be pursued so that the palate may become accustomed to being handled, and the patient habituated to endurance.

The instruments and appliances I used were, a fine scalpel with a sharp point; curved and straight forceps; scissors; short, curved needles, with an instrument for the purpose of carrying them through the margin of the parts about to be brought together; a pair of pliers; strong, waxed ligatures, eighteen inches in length; a few metallic beads, softened, and a number of small, fine sponges. The needles I had made were three-quarters of an inch in length from the eye to the point, with about an additional eighth of an inch beyond

the eye, which was received into the socket of the holder, and were considerably curved; the holder was something like that used for crochet needles, the slide being moved by a strong silk thread, which was attached to another slide working along the handle. I may here mention, that in the present case the fissure extended from the hard palate to the point of the uvula, dividing the velum into nearly two symmetrical portions, and was one inch and a half in length.

Having the various instruments noticed in readiness, I seated my patient before a good light, resting her head against an assistant's breast, who stood behind her. I then carefully pared off the margin of each division of the palate down to the points of the split uvula, and extended the incision a quarter of an inch above the point of separation and upon the margin of the hard palate. Smart hemorrhage followed these incisions, and it became necessary to wait for ten minutes, during which time the patient was gargling and rinsing out the mouth and throat with iced water. The bleeding having ceased, I carried a needle, threaded with a double ligature of silk, through the left side of the soft palate, about one-eighth of an inch from its margin, and midway between the edge of the hard palate and the point of the uvula. I then seized the needle, drew it forward, after detaching it from the holder; again fixed and carried it through the opposite side, brought the needle out and unthreaded it, having then on one side of the mouth the "bight" or doubling of the suture, and, in the other, its two ends: and thus with each point of suture in succession. The steps just related were attended with some difficulty, and the eccentric motions of the sides of the palate, and the trickling of blood into the throat from the punctures, with a profuse secretion of viscid saliva, kept up so much irritation as to cause considerable delay; the first suture, however, having been passed and secured, the succeeding steps were greatly facilitated. I now beg to direct attention to the method I adopted to secure each suture after it had been passed successively, as I have demonstrated: I seized the "bight" of the ligature, and passed one of the ends through it, then, by drawing gently on each of the ends, alternately, the edges of the palate were brought into accurate apposition. I next passed both ends of the suture through a metallic bead, pushed this close up to the palate, and then pinched the bead with pliers so as to securely fasten the suture. The five points of suture which I found it necessary to use having been properly secured, I observed that there was great tension of the soft palate, and a drawing of it upwards and backwards towards the posterior nares; to obviate this action and remove the tension, I made two incisions, extending obliquely outwards and backwards from the edge of the hard palate, and from within half-an-inch of the recently joined velum to within three-fourths of an inch of the arches or margin of the soft palate. These incisions were nearly an inch in length, and divided through the entire structure of the palate on either side between the points just mentioned; so soon as they were made, the drawing-up of the palate immediately ceased, and all tension on the sutures was over-

come, while two gaping wounds, at least a quarter of an inch wide, were left.

The patient was now made to gargle out the mouth freely with iced water, and was removed to bed, the attendants being desired to give her milk and cool tea in small quantities if she complained of thirst.

Six hours after the operation I was pleased to find that she had slept, and was quite comfortable, all irritation having entirely ceased, the palate remaining quite passive. Next morning the parts looked very well; there was no undue redness or swelling; and the edges of the wound seemed in due apposition, while the palate was quite passive, save a slight motion in the uvula; the lateral wounds were suppurating. On that day she had good beef-tea, jelly, milk, &c., freely given to her; and I may remark, that she continued to take similar nourishment during the first four days. Everything progressed most satisfactorily, and on the evening of the third day after the operation, I removed three of the points of suture, leaving the two central still in; these, however, I removed on the following day, at which time the central wound had completely united, while the lateral incisions were nearly filled up by granulation. After this date my patient had solid food, with porter, for dinner.

The operation, the steps of which I have just related, was necessarily tedious and painful, in consequence of the irritation caused by coming so much in contact with the back part of the tongue and fauces; if, along with this, the patient were to become unsteady, great difficulty would also attend it. There are two points in the operation now detailed to which I wish to direct attention: the first is the method by which the sutures were fastened, namely, by passing one end of a double ligature, after it had been carried through the opposite sides of the palate, through its duplicature or "bight." This method, in my opinion, greatly facilitates the "rendering" or *free* action of its two parts in coming closely together, and thus effecting true apposition of the pared margins of the palate, without any risk of tearing or cutting through its substance. It has been recommended to use a single ligature, and fasten it by running one end through a simple knot on the other part, and thus draw the two portions closely together; but there is this objection, that should the thread be uneven, it is likely the knot would jam too soon, and thus the suture would become useless. I am not aware that the method I recommend has been alluded to or put in use before.

The other point in my operation to which I would refer is, the manner in which I made the lateral incisions, for the purpose of overcoming the action of the palatal muscles, and the consequent strain upon the sutures. Whether a similar plan of division has been before practised, I am not prepared to say; but I have not seen it clearly stated in any work, what should be the extent or direction of these incisions. I consider, however, that those I made are best calculated to facilitate union by the first intention—which is the surgeon's aim—as from their direction and extent they completely

divide the *levator* and *tensor* palato-pharyngeal, and probably some fibres of the *palati* muscles, on each side, and thus prevent any action that could possibly interfere with union.

The nicest and most difficult part of the operation is paring the entire margin of the cleft accurately, because whenever an attempt is made to seize the palate its muscles are thrown into action, and produce the most extraordinary eccentric motions, drawing the half velum up towards the nares and twisting the uvula in a very surprising manner. Hence arises the question, should not the muscles be divided in the first instance? Perhaps they should; but, beyond rendering more easy the process of paring the edges of the cleft, I question whether such a step would facilitate the other parts of the operation; indeed I am disposed to think that if it were performed first, neither could the needles be so easily passed, nor the wound be brought so accurately in apposition; besides which, the surgeon cannot tell, *a priori*, to what extent the lateral divisions of the palate should be made,—hence, were I to operate again in a similar case, I should pursue the course I have already marked out. The system of starvation after the operation, insisted on by some writers, is altogether needless, especially if the lateral incisions be made, for then it is impossible that the smallest disturbance of the wound can take place in the act of swallowing fluids. This has long since been pointed out by Sir Philip Crampton and Mr. Fergusson; consequently, there should be a liberal supply of nourishing fluid food given during the first few days of the cure, after which solid food may be safely taken.

The sutures should not be left in too long, as they may cause deep ulceration; they should not, I think, be removed earlier than the third day, or later than the fifth. Six weeks have elapsed since the operation, and already my patient has felt the great benefit conferred by it, as the act of deglutition is unattended, as formerly, with any unpleasant results. With respect to the improvement in speech, there has scarcely been sufficient time yet to promote it, as a course of careful training is usually required to overcome the previously acquired habits of articulation; yet there is, doubtless, an appreciable change for the better in the tone of the voice even now.

Case II. *Case of Strangulated Femoral Hernia, with Effusion of Serum into the Abdominal Cavity; Operation; Recovery.*—On the morning of Friday, the 8th of August, 1851, I was called to see a patient some miles from Belfast; the messenger who came could tell me little more than "that the person had been ill for some days with vomiting and stoppage in the bowels,—with a lump in the groin, for which he understood that some operation would be required." Believing, from this, that the case was one of strangulated hernia, I carried the requisite instruments with me. On my arrival I found a female, of about sixty years of age, and of a weak, delicate appearance, lying on a bed, suffering great pain, and at intervals rejecting from the stomach the fluids which her thirst constantly demanded. On examining the egesta I found in the fluid a mixture of bile and feculent matter; and inquiry led me to learn that the bowels had not

been relieved since the previous Tuesday,—during which time more or less vomiting had prevailed,—but the symptoms had greatly increased from Thursday morning. In the right groin I found a tumour about the size of a large walnut, very hard and painful to the touch, while the abdomen was very much swollen, and quite tender on pressure; pulse quick and weak. Attempts at reduction having frequently been made during the previous day by the medical gentleman who had been in attendance, I considered that any further effort of the kind was quite out of the question, and I determined, therefore, to operate at once. I had not any one to assist me, as the only surgeon in the neighbourhood was unavoidably absent in attendance upon an urgent case; however, as there was present a steady, intelligent female, who offered to "make herself useful," I had the patient removed to a table covered with a blanket and sheet, and commenced. Division of the integument,—in a line with the fold of the groin,—and successively of three layers of fascia, brought me to the hernial tumour, which, now freed from the pressure of the fascia that had bound it down, projected forward, covered by its investing sac. The sac having been carefully opened, a knuckle of intestine presented, of a very dark greenish hue, yet still retaining its polished surface, and without any odour of decomposition; a small quantity of deeply-coloured fluid escaped at the same time. On making examination for the seat of the stricture, I found that the neck of the sac was very tightly bound by an unyielding fascia, at the upper and inner side of which the finger-nail could be passed beneath its sharp edge. As I could not at any point introduce a director, I pressed the point of the index-finger firmly against the stricture, with the nail beneath its margin, and then carried a very fine probe-pointed bistoury on its flat surface along my finger until its point was at the barrier, when, by withdrawing my finger a little, and pressing the bistoury gently backwards, its point got beneath the tense edge of Gimbernat's ligament, which a very slight turn and pressure of the knife upwards and inwards served to divide; then a little further use of the knife completely freed the neck of the sac, and permitted the prolapsed intestine to be returned. After the gut had been pressed up, on withdrawing my finger, it was followed by a stream of a straw-coloured serum, which continued to flow until fully fifty ounces had escaped. I then brought the wound together with four points of suture, and applied a compress and bandage; the patient was removed gently to bed, and strict quiet was enjoined. The fluid which had escaped from the abdomen, on standing for some time, became of the consistence of thin jelly, but was again rendered fluid by agitation; it also formed a firm coagulum upon the addition of nitric acid, or the application of heat.

Ten hours after the operation I visited the patient, and found that the fluid from the abdomen had flowed away during the interval, and had completely saturated a folded sheet placed beneath her; her bowels had acted twice, pretty copiously; still there was much swelling of the abdomen, with great tenderness; her pulse was

stronger and less frequent than before the operation; and on the whole she not only looked but expressed herself as feeling better, though some irritability of the stomach still remained. As she had not passed any urine since immediately before the operation, and now felt a desire to do so, but without the power, I introduced the catheter, and removed twelve ounces of highly-coloured fluid. Before leaving, I ordered two grains of calomel, with five of Dover's powder, to be given every three hours, and bran stupes to be constantly applied over the abdomen. Next morning the patient went on pretty favourably, though there was not any marked change for the better; the bowels had once again acted, yet the bladder continued unable to expel the urine, but the catheter was passed with immediate relief; the tenderness and tumefaction of the abdomen were still present, though perhaps in a less degree, and the irritability of stomach quite gone. I desired the powders to be continued as before, with a like application of the moist, warm bran. The following day the patient, I found, was restless, heated, and complaining of great difficulty of breathing; the pulse was quick and intermitting; the tongue furred and dry, with urgent thirst; the abdomen greatly swollen and tympanitic, but not so tender, and the bladder still paralysed. Under these circumstances, and as the bowels had not acted since early on the previous morning, I ordered an enema, containing castor oil and oil of turpentine, each four drachms, mixed in thin gruel, to be administered immediately, and to be repeated in three hours if the swelling of the bowels was not greatly reduced; I also directed an active diaphoretic mixture to be given along with the powders, which were to be continued. On the evening of Tuesday, the fourth day from the operation, I found that the former urgent symptoms had nearly all subsided; the tension and tenderness of the abdomen had almost disappeared; and the patient complained of little, save the inability to void her urine, and of general weakness. The mouth on this evening was observed to be affected, and the system under the influence of mercury; consequently, the calomel was discontinued, save two grains at bed-time along with ten grains of Dover's powder. Beyond a slight diarrhœa, which appeared on the sixth day, there was little in the aspect of the case to cause any further uneasiness; the patient gradually gained ground, the wound healed up, the bladder regained its tone, and at the end of three weeks she was able to leave her bed and to be removed into the open air.

Remarks.—The case just related has some points about it which induce me to publish it for the information of the profession, as I deem it the duty of every surgeon to lay before his brethren whatever in practice strikes him as possessing novelty or interest. The time the strangulation had existed, the extreme narrowness of the aperture through which the intestine had escaped, and the great discoloration of the latter, with the urgent and dangerous symptoms that preceded and followed the operation, yet succeeded by a fortunate result, constitute, in my opinion, a case which is of practical importance, and will, I trust, be deemed of some interest. With regard to the fluid which

escaped from the abdominal cavity, I cannot, of course, determine at what period it was effused; but, from the history of the patient up to the day the strangulation occurred, namely, three days before the operation, and also from the symptoms throughout, I am led to believe that the effusion took place between Tuesday and Friday, and was the result of peritoneal inflammation, of course, not of an active character. In conclusion I may remark, that all medical men must have observed how frequently cases of a similar kind occur within a limited period; and in illustration of this I may state, that the case under consideration was the fourth of strangulated femoral hernia which had come under my notice within a few months: in one the hernia was reduced after most persevering trials; in the others an operation was required; and in each was followed by a favourable result.

Cases of Traumatic Phlebitis followed by Gangrene, and requiring Amputation. By Charles Croker King, M.D., M.R.I.A., Professor of Anatomy and Physiology, Queen's College, Galway.

Within the last few months two cases of gangrene, consequent upon traumatic phlebitis, have fallen under my care in the County of Galway Infirmary.

The first was that of a boy aged twelve years, admitted into the hospital on Thursday, the 3rd April, 1851. On the previous day a heavily-loaded railway waggon had passed over the centre of his left arm, fracturing the bone, and severely contusing the soft parts. A small but deep wound was situated exactly over the ordinary position of the humeral artery; the hand was cold, and there was paralysis of sensation in it and in the fore-arm, both of which were slightly swollen. The question immediately arose as to the cause of the diminished sensibility and reduced temperature—was it referrible to injury of the artery, or of the nerve, or of both? A director could be passed through the lacerated skin and fascia down to the site of the brachial artery. There had been little or no hemorrhage at the time of the accident, and on admission into hospital there was neither internal nor external bleeding; it was consequently considered prudent to endeavour to re-establish the circulation in the limb by the application of artificial heat; the fore-arm was wrapped in flannel, and bags containing hot salt were placed in its vicinity.

On the following day some hopes of the recovery of the limb were entertained, as its temperature appeared to have risen. These, however, proved fallacious, for the increased temperature was the result of the external application of heat, and not of restored circulation.

On the following day, the œdema had increased, and there was considerable venous congestion; dark-coloured vesications appeared on the limb, which was evidently rapidly running into a state of gangrene; the face was flushed; pulse 120; tongue furred; he had raved during the night.

On the fourth day, the fever had abated, the pulse had fallen twelve beats in the minute, and he had passed an easier night.

The following morning the pulse had fallen to 82, and the patient's general condition was altogether improved; gangrene had not spread; and it was circumscribed by a bright red margin, which, subsequently ulcerating, formed a distinct line of demarcation.

On consultation, it was determined that, as the symptoms were not pressing, it would be more prudent to postpone the removal of the limb, than to run the risk of renewing the severe irritative fever which had only just abated.

On the tenth day from the receipt of the injury the following was the condition of the patient: tongue clean and moist; pulse 82; soft parts on the anterior aspect of the limb have given way, and both the upper and lower fragments of the humerus protrude; integuments and soft parts on the posterior aspect retain their vitality nearly as low down as the elbow; the slightest motion causes extreme pain, and there is a most abominable fetor from the wound.

On consultation (the consent of the parents having been with much difficulty obtained), it was determined to remove the limb, which I accordingly did, the patient having been previously placed under the influence of chloroform, which produced anæsthesia, but not insensibility, as he appeared conscious of everything but pain. During the operation, the brachial artery, and also some branches of the profunda, sprung, and had to be tied.

Examination of the limb exhibited a transverse fracture of the humerus; the upper fragment also presented four vertical fissures; brachial artery and median nerve sound; injection thrown into the former filled the radial and ulnar arteries. The coats of the venæ comites of the brachial artery were thickened, and the cavities obliterated for the extent of two inches.

The subsequent progress of the case did not present any remarkable feature; wound healed by granulation; recovery was progressive and satisfactory.

Case II.—Patrick Quinn, aged 50, a car-driver, who confessed that he was formerly of intemperate habits, but for some months past boasted that he had become a reformed character, had abjured ardent spirits, and placed himself on the restricted allowance of eight pints of ale in the twenty-four hours, was admitted into the Infirmary on Thursday evening, the 14th August, 1851. Three days previous to admission, while in a state of intoxication, he fell from a coach-box, and received a severe contused wound, in the right popliteal space, from a horse's shoe.

The right limb is enormously swollen, from Poupart's ligament to the foot; the site of the injury is marked by a contused wound, two inches long, in the popliteal space, and from which, by pressure either above or below, fetid gas escapes; limb below the wound deadly cold, insensible, and marbled over by congested veins; several dark-coloured, flaccid vesications have arisen. Tongue clean. Pulse 70.

The removal of the limb was proposed, but would not be submitted to by the patient.

On the 17th of August, the limb, from the knee down, having become green and gangrened, and the patient having abandoned all hopes of its being saved, consented to its removal. Tongue still clean. Pulse 70. Sleeps little, and complains much of pain.

At four o'clock, on the 17th August, the patient having been placed under the influence of chloroform, I amputated the limb; the femoral artery was commanded by pressure below Poupart's ligament. Very little arterial blood was lost, but there was free venous hemorrhage from the limb below; the operation was performed in a short space of time; the femoral artery and collateral branches were quite pervious; the only unusual circumstance noticed was, that the femoral vein, when divided, remained open like an arterial mouth.

Examination of limb showed the popliteal artery uninjured, injection thrown into it filled the tibial branches; the popliteal space was filled with putrid blood and pus. The coats of the popliteal vein were thickened, and its caliber completely obliterated. Veins below dilated and varicose. The operation was succeeded by partial sloughing of the stump; however, under appropriate, local, and constitutional treatment, this entirely ceased, and the stump presented a healthy and clean surface. My attention, during the entire progress of the case, was attracted by the following facts, namely, that the stump was flabby, and that the patient appeared as if weighed down by some heavy, mental load; he was continually desponding, and was restless and dissatisfied in every position.

Matters, with the above exception, went on favourably, until the 29th August, the twelfth day after the operation; up to this period the tongue was clean, and the pulse 70. On this day, the patient was reported to have had a severe rigor, and to have vomited a quantity of bile.

During the succeeding days, the patient's state may be briefly summed up; the vomiting continued at intervals for some days, and then ceased. The rigors were *intense*, and were repeated once, twice, or three times in the twenty-four hours. They were succeeded by a hot stage, during which the pulse usually rose to 150 in a minute; on the termination of the paroxysm by sweating, the pulse invariably fell to 70.

7th September.—Since last report the above symptoms, with the exception of the vomiting, continued with increased severity. The tongue became brown, the skin sallow, the features pinched, respiration laborious, hiccough, and low, muttering delirium supervened, and he expired on the twenty-sixth morning after the receipt of the injury, and three weeks after the date of the operation.

Post mortem examination.—Femoral artery obliterated from the site of the ligature to the first collateral branch. Saphena vein, for four inches from the face of the stump, and also the femoral vein, for the same distance, had their coats thickened, and their cavities

completely obliterated; above this, both veins contained disorganized blood and pus. Iliac veins perfectly healthy.

Purulent deposition, to the amount of several ounces, was found in the cavities of both pleura. Surfaces of pleura covering posterior lobes coated with semi-fluid lymph. *Surface* of lungs corresponding to the lymphy exudation, of a bright mulberry colour, with several spots of hepatization, and small, purulent deposits in the substance. Liver and other abdominal viscera perfectly healthy.

In the above case, the situation of the wounds, directly over the main arteries of the limbs, in the first instance, at least in the boy, Brennan, suggested the idea that the passage of blood through the humeral artery was interrupted, and in consequence an attempt was made to establish collateral circulation; the failure of this expedient, and the continued swelling of the limb*, accompanied by evidences of venous congestion, and the formation of bloody vesications, however, convinced me that the gangrene was not caused by diminished arterial supply, but by venous obstruction. The presence of the above symptoms, in the case of Quinn, at the time of admission, for the same reasons, notwithstanding the position of the wound, induced me to come to the same conclusion; for, had the supply of arterial blood been intercepted, I would have expected to find the limb dry and shrivelled, as we see in cases of gangrene from arteritis, or in the course of malignant fevers. In these latter cases, it is well known that if amputation be performed, frequently no ligatures are required, the vessels having been all obliterated; whereas, in both the cases detailed, the usual number of vessels had to be secured.

From these facts, would we be justified in arriving at the following general conclusion?

That in severe injury of a limb, even though the principal lesion be situated over the main vessel, if the limb be, in the first instance, cold and insensible, and subsequently should become congested, and œdematous, and vesications arise, the obstruction is to be sought for in the venous and not in the arterial system.

The flabbiness of the stump in the case of Quinn is worthy of remembrance. I have often noticed this absence of healthy, adhesive inflammation in the persons of habitual drunkards; and also that the contractile power of the arteries is much diminished, and that blood drawn coagulates feebly. I have frequently observed, also, that in such patients slight wounds continue to bleed for an unusual length of time, so much so, that blood can be obtained, *ad libitum*, by cupping, and there is frequently a protracted oozing of blood from leech-bites; that from the tendency which mercury has to reduce the quantity of fibrine in the blood, such patients bear the administration of this mineral badly; and that, when inflammation does arise, either spontaneously or from injury, it frequently presents itself in the form of erysipelas, or of diffuse or other forms of inflammation,

* A distinction, of course, should be drawn between œdematous swelling, and that caused by extravasated blood.

in which there is little disposition to the effusion of healthy, coagulable lymph.

The deposition of purulent matter in the substance and on the surface of the lungs, in the case of Quinn, is in strict confirmation of the views and experiments of Cruveilhier, who attributed the purulent deposits, which so frequently occur in phlebitis, to the arrest of the pus corpuscles in the first capillary net-work which they encounter in the round of the circulation: hence the situation of the purulent deposit in this case; whereas, if the phlebitis had existed in any of the viscera whose veins contribute to form the portal system (if the above views be correct), we might infer that the purulent deposit would have been found in the substance of the liver; which organ, however, did not exhibit any evidence of disease.

The *perfect* intermission of the febrile symptoms in the case of Quinn is interesting,—proving, as it does, that such intermission is consistent with the presence, not only of serious, but even of fatal disease.

I am inclined to consider that a closer analogy than is generally conceded exists between diffuse inflammation and phlebitis; at all events, these two forms of disease occur in the same description of habits, and are attended with a very similar train of symptoms; purulent deposits are frequently found in connexion with both; and diffuse inflammation frequently results from the inoculation of the products of phlebitis, and *vice versâ*.

I mentioned that, in both of the above cases, I used chloroform. In the case of Quinn a train of symptoms, which I have frequently remarked, presented themselves during the stage of excitement which preceded the full anæsthetic effect, namely, that irregular ideas connected with his ordinary habits rapidly passed through his mind;—he called for a drink and for his pipe, and acted as if engaged in the management of a refractory horse. I had occasion lately to administer chloroform to a woman of the town; at first she became much excited, and favoured us with expressions and gestures more characteristic than elegant, and which at once removed any doubt as to the nature of her calling.

A short time ago I removed a toe and a portion of a metatarsal bone from the foot of a child of about three years and a half old; the little patient was placed under the influence of chloroform in a few seconds. I allude to the case as I am aware that some practitioners entertain doubts as to the propriety of using anæsthetic agents at so early a period of life; its action was most satisfactory; after the operation she inquired if the toe was off, and, when answered in the affirmative, she appeared surprised and gratified.

Case of Tetanus; Chloroform Inhalations; Recovery. By J. T. Banks, M. D., M. R. I. A., King's Professor of the Practice of Physic, Physician to the Whitworth and Hardwicke Hospitals, &c.

Patrick Reilly, a coach-painter, aged 22, was received into the Whitworth Hospital on the 14th of August, 1851. He was a man

of rather powerful frame, and had been in the enjoyment of excellent health all his life, up to the commencement of his present malady.

Two months before his admission he had been very severely wounded in the fore-arm by a drill; the wound, however, healed in the ordinary course, and without any unusual or untoward symptom, leaving a deeply-puckered cicatrix of more than an inch in length.

Nine days antecedent to the accession of the disease under which he now labours, he received a kick on the nose in a drunken brawl, and lay out in the open air at night for some hours, exposed to wet and cold, being at the time in a state of intoxication. The wound of the nose was a slight lacerated one, but there was considerable ecchymosis of the eyes and face generally. After the receipt of this injury, he remained apparently well for nine days, until the 7th of August, when he felt languid and restless, with an irresistible propensity to yawn: headach and constipation of the bowels were also present.

On the following day he experienced a sensation of stiffness in the muscles of the back of the neck, with soreness of the throat and some difficulty in deglutition. Gradually the muscles which move the jaw became rigid, and by the close of the next day (9th August) the group of symptoms constituting trismus was completely established.

On admission he presented the ordinary characters which appertain to tetanus in its most aggravated form. The sterno-mastoid muscles were very rigid, and stood out prominently, the head being retracted. The body was arched, its weight being supported chiefly by the occiput; the abdominal muscles were tense and hard. He complained of a sense of constriction and oppression of the chest, with pain of the most excruciating kind under the xiphoid cartilage. For the last three days the lower jaw was, at intervals, carried spasmodically and with violence against the upper; the state of opisthotonos being at the same time augmented. In the condition of comparative relaxation, the handle of a spoon could with some difficulty be introduced between the teeth. The exacerbations generally occurred at the moment of his falling asleep, causing him to start in extreme alarm, and thus producing a most painful and distressing watchfulness. The face was flushed, and of a livid hue; skin hot; pulse 120; bowels constipated; urine scanty and high-coloured. A slight degree of facial paralysis was observed, one of the eyes remaining partly open under all circumstances. Croton oil was administered, and acted fully, the dejections being dark-coloured and peculiarly offensive; and a quarter of a grain of extract of belladonna was directed to be given every second hour. 15th August.—A marked increase in the intensity of all the symptoms; the jaws are now closely and *permanently* locked; respiration performed with excessive pain and considerable difficulty; face and body immersed in copious sweat. One grain of extract of Indian hemp to be given every hour. 16th and 17th.—No marked diminution of the severity of the symptoms; restless and uneasy; frequent recurrence of spasms.

It was now determined to administer chloroform by inhalation, with a view to produce relaxation of the spasmodically-contracted muscles; chloroform was accordingly inhaled until perfect anæsthesia was produced. On restoration to consciousness, the patient was able to open his mouth to the extent of fully an inch; swallowed with ease a pint of milk with eggs beaten up in it; expressed himself as feeling much relieved in all respects, and soon fell into a calm sleep, which was not, however, of long duration.

On the morning of the 18th the chloroform inhalation was repeated, and followed by a most unequivocal amelioration of all the symptoms; the tetanic expression of the countenance to a great degree disappearing, and the muscles of the abdomen becoming relaxed.

19th.—A drop of croton oil was given, which abundantly relieved the bowels. The Indian hemp was now discontinued, as the patient complained of a sensation which he compared to commencing intoxication; the chloroform inhalation as before.

20th.—The spasms were of a severe nature, and of frequent recurrence from 10 o'clock last evening until 6 o'clock this morning, after which he got some hours' quiet sleep. As the spasms attacked the patient in the evening almost exclusively, it was decided that the chloroform should now be administered in the evening and not in the morning.

21st and 22nd.—Decided improvement; remissions much longer, and the spasmodic paroxysms far more mild.

23rd.—A long, calm, and refreshing sleep after the chloroform. From this date there was progressive and uninterrupted advance towards recovery; spasms very slight, and only at night up to the 28th, after which they did not return, but the tetanic expression of countenance continued.

Debility and stiffness of the muscles remained for some time, but after two or three warm baths all traces of the disease disappeared, and in a few days he was discharged from hospital restored to perfect health.

Remarks.—Was this case one of traumatic or of idiopathic tetanus? This question I have repeatedly asked myself, without being able to arrive at a satisfactory solution, for here we have the two causes co-operating, which we know to be potent in the production of the disease, namely, a wound, and exposure to the combined influence of cold and moisture.

I am disposed to look upon it as traumatic; but mayhap the wound would not in itself have been sufficient to cause the disease but for the addition of exposure to cold and wet. We know that both, combined and acting together, are more formidable than either singly. The time which elapsed is strongly in favour of the disease being traumatic,—indeed, almost conclusive. In this case, I have no hesitation in attributing the successful issue to the use of chloroform; and its effects were such as should lead us to expect the most satisfactory results under similar circumstances. Up to the moment of its administration, the symptoms were positively proceeding from

bad to worse,—the remedial measures which were being employed making no impression on the disease.

The records of periodical literature, home and foreign, present a goodly array of facts proving the salutary influence which chloroform exercises on the course and termination of this most appalling malady. In some instances relaxation of the muscles, soon followed by sleep and subsequent recovery, were the results derived from inhalations of chloroform only once employed.

Dr. Neligan has directed my attention to a recent number of the "Bulletin Général de Thérapeutique," in which Dr. Baudon relates a most interesting case of tetanus, in which the use of belladonna and opium was carried "jusqu' à la saturation," without producing any good effect; finally, chloroform was had recourse to with manifest advantage. To quote his own words:

"Le malade est dans un état pire que jamais. Les symptômes sont effrayants; on ne peut introduire le moindre médicament dans la bouche.

"A peine s'il pousse quelques cris. L'opisthotonos est arrivé à un point extraordinaire, et le renversement des muscles du cou en arrière fait saillir fortement le cartilage thyroïde.

"Le rachis se courbe en avant, l'oppression est extrême, les douleurs sont intolérables dans tous les muscles, ceux-ci sont durs comme du bois. Devant des phénomènes aussi alarmants je songe aux inhalations anesthésiques. Une demi-minute suffit pour le plonger dans un sommeil profond, qui dure une demi-heure, et pendant lequel les traits du visage expriment une sensation indéfinissable de bien-être."

In conclusion, he goes on to say:

"A partir seulement de l'inhalation j' ai obtenue un bon résultat qui ne s'est pas démenti. A dater de ce moment, les muscles se sont relâchés peu à peu et la guérison est venue."

In the majority of cases, as in the example before us, the oft-repeated application of the anæsthetic inhalations was required to produce the curative effect. I ascertained, in the treatment of the case I have detailed, that the inhalation of a moderate quantity of chloroform was adequate to produce relaxation of the muscles, so that latterly we never prolonged the inhalation to the extent of inducing anæsthesia.

It is not my object at present to discuss the treatment of tetanus, but simply to report the facts of a highly instructive and interesting case, and to strongly urge upon others to give chloroform a full and extensive trial in similar cases. I am far from claiming for it the power of curing tetanus in all instances; but even when there is a tendency from the first to a fatal termination, we have still an agent at our disposal which has the power of allaying pain and spasm for a season, and of rendering the last moments of life comparatively free from suffering. I am persuaded that, upon all who witnessed this case, a deep impression was made, and one not easily to be effaced. As for myself, I shall not in future hesitate to have recourse

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to the chloroform treatment from the earliest moment, believing that all other remedial means are of secondary importance. And even in those cases in which we cannot expect that our efforts are likely to be crowned with success, we shall, at all events, enjoy the high gratification of making "smooth the path which leads to dissolution."

Case of Monstrosity[a]. By James Bower Harrison, M.R.C.S.E., formerly Surgeon to the Ardwick and Ancoats Dispensary, &c., Manchester.

It is proper that cases of a singular nature should be recorded in our repositories of medical literature, at the same time that it is borne in mind that the value of information is properly in proportion to its practical applicability. It is in some measure, however, necessary for the right estimation and appreciation of customary morbid phenomena, to know that occasional deviations arise; and sometimes such deviations may in themselves be the subjects of considerable solicitude. From such considerations, it seems to me that the following instance of monstrosity may be deemed worthy of a brief attention.

On the 10th of January, 1849, about seven o'clock in the evening, I was summoned to attend a poor woman who was in labour, and whom I had not previously seen. When I arrived at the house, I found that she had already gone to bed, and was suffering from the usual pains. On making a vaginal examination, I perceived that the membranes were protruded in an elongated tumour, but I could not detect through them any part of the child by which to ascertain the nature of the presentation. The pains were pretty good, and returned at short intervals; so that, after some little delay, the membranes burst, and a considerable quantity of water was discharged. The water exceeded in quantity the usual amount, so that a good-sized chamber utensil was speedily filled with it, notwithstanding a portion had been lost on the floor. I then made a further examination, when, to my surprise, I felt a soft tumour presenting, which resembled the bag of membranes, previously to its rupture. This apparent bag became tense during the existence of the labour pains. As there was no hemorrhage, it could not easily be confounded with the placenta; nor did it, to the touch, so much resemble the placenta as the ordinary membranes. Being undecided in what light to regard this soft tumour, I began to feel carefully round it, passing my hand for this purpose fairly into the vagina. During this examination a quantity of water continued to flow. At length I discovered a hard substance, partially concealed behind the tumour, and resting closely against the parietes of the uterus. After some perseverance, I contrived to insinuate my hand still far-

[a] The case was read before the Royal Medico-Chirurgical Society of London, by Dr. Vesalius Pettigrew, for the author.

ther into the vagina, so as to examine the hard body more completely, and to my satisfaction, found it to be a leg. Though it was considerably distorted, I was enabled to recognise the foot, and to put my finger on its soft plantar aspect. By this time the pains seemed almost gone, but whenever they returned, in any appreciable degree, I made traction with a ligature which I had succeeded in passing round the foot. I already imagined that the fœtus was a monstrous growth, which opinion was corroborated by the palpable distortion of the foot. The pains continuing to be feeble, I administered a drachm of the ergot of rye, in divided doses. After this, the pains improved, and the traction which I made seemed gradually to bring down the foot. I was soon enabled to run my finger to the top of the thigh; but here, instead of feeling the genital organs, or the other leg, I felt a substance which resembled the body of a child, which might be conceived to have only one leg, and no organs of generation. The soft mass was still to be felt. I continued to make traction, gradually increasing my efforts as the pains became more of a bearing-down character; and endeavouring, as far as it was possible, to suit the direction of the body to the ordinary turns which are made in cases of foot presentation. After some time, the vagina became filled with the mass of parts described, and eventually they came through the os externum, the rest of the body following, although in a most curious state of distortion.

It was now evident that the fœtus was a monstrous growth; the soft mass being formed by a kind of hernial protrusion of the abdominal viscera. On examination, I found that the navel-string had broken off close to the part which corresponded to the umbilicus. After some little delay, I removed the placenta with the hand, having previously secured a healthy contraction of the uterus. The whole was accomplished by about ten, or half-past ten o'clock, P. M.

I had now time to look more accurately at the appearance of the fœtus. The head was naturally formed; and the shoulders, arms, and chest were all natural. The abdominal parietes were deficient below the umbilicus; the skin seeming to part on each side, so as to permit the hernia of the bowels.

The right leg was placed in a transverse manner, and the foot curved inwards; but by traction it could be drawn into its proper position. The left leg was raised up by the side of the body, and could not be drawn down, being pushed out of its proper direction by a soft tumour which was found to arise from the sac of a spina bifida. This gave the child the ridiculous appearance of a clown painted in a theatrical representation, with the legs separated to an almost impossible extent. The foot of the left leg was also curved like the other.

As it is difficult by any description to represent the position accurately, without fatiguing the patience of the reader, he is referred to the lithograph, from an excellent drawing executed by Mr. Stephenson, and which shows the appearance of the fœtus *in utero*. The curious *packing* of this distorted figure is worthy of remark.

It may again be stated that the right leg was, at first, in immediate apposition with the uterine walls, and was concealed by the hernial tumour, which, on account of its softness, was more readily acted upon by the pains of labour. On examination, the ossa pubium were found deficient, and the spinous and transverse processes of the vertebræ of the lower part of the spine, together with the posterior walls of the sacrum, were also wanting. The genital organs were imperfect. The penis, which was extremely minute, was imperforate; but a small aperture below communicated with the bladder. The mother continued well for some days; she then complained of headach, and mentioned having an offensive lochial discharge. The use of warm water injections, and attention to the bowels, soon, however, recruited her health; and she speedily resumed her domestic duties. This case seems to the writer to possess considerable interest, on account of the presentation of a soft tumour, the nature of which could not, in the first instance, be understood.

Case of Hernia of the Lung, caused by the Handle of a Wheelbarrow penetrating the Side of the Chest. Reported by G. A. K. Lake, M. D., House Surgeon to the Royal South Hants Infirmary.

James Taylor, aged 32, a labourer employed on the new docks, rather a small, thin man for such an occupation, but with a well-made chest, has lived temperately, enjoyed good health, and is married; on July 29, 1851, he was wheeling a barrow along a narrow plank, when it slipped, dragging him after it; he fell down about five feet, and pitched on the wheelbarrow-handle, which was in a perpendicular position. The handle entered his side, but slipped out again. He was admitted into the Royal South Hants Infirmary, under the care of Dr. J. Bullar, at five o'clock, p. m., about half-an-hour after the accident, when, on examination, a wound ten inches in length was found about three inches below, and to the outer side of the left nipple; protruding through it, and also through a hole in his waistcoat, was a portion of lung as large as a man's fist, which expanded and contracted very considerably with each act of respiration. The lung was very healthy in appearance, and there did not seem to be any wound of the pulmonary pleura. One rib was at the time thought to be fractured, but the state of the patient prevented any very accurate examination; and it is difficult to believe that so large a body as the handle of a wheelbarrow could have entered his chest without fracturing the rib.

He experienced great difficulty of breathing; the expression of his countenance was anxious; and there was much collapse; pulse 60. The lung was immediately replaced; and in the act of so doing, a very small quantity of air escaped into the pleura. The wound was brought together with stitches and strapping; and the whole of that side of the chest was confined by straps of adhesive plaster, passing half-way round. He was placed on his wounded side; but,

appearing quite unable to breathe in that position, was changed, so as to be on the sound side. The apex of the heart could be felt beating, within half-an-inch of the anterior angle of the wound. There was no hemorrhage.

Seven, P. M.—Feels much pain, particularly in the left shoulder; pulse 80, respiration 36. He was ordered half a grain of muriate of morphia.

July 30.—Has passed a good night; feels very little pain; prefers lying on the sound side; the plaster prevents all movement of the diseased side; pulse 102, respiration 32; farinaceous diet, and the morphia to be repeated at bed-time.

31st.—He is quite easy; pain in the shoulder almost gone; no appearance of discharge at the wound; skin moist; urine plentiful; bowels not opened since the accident; pulse 102, respiration 29; he was directed to take five grains of compound rhubarb pill, with half a grain of muriate of morphia, at bed-time.

August 1st.—The side is quite easy, but he complains of a feeling of fulness; bowels have not acted; pulse 104, respiration 25; the medicine was ordered to be repeated.

2nd.—Still complains of the feeling of fulness; bowels have not acted; no visible discharge yet at the wound; pulse 102, respiration 18; he was ordered to take two pills, containing seven grains of compound colocynth pill, two grains of extract of hyoscyamus, and one drop of oil of peppermint. Evening.—Bowels not yet acted on; a mild injection was administered, which produced the desired effect.

3rd.—He complains of a little pain in the side, particularly on breathing deeply; pulse 94, respiration 25; a slight friction sound, and some bronchial respiration to be heard near the wounded part. Evening.—Acute, lancinating pain in the side; friction sound very distinct; pulse 98, respiration 37; wound dressed; slight, superficial sloughing; very little discharge; he was directed to take a pill containing two grains of calomel, and half a grain of opium every second hour.

4th.—Much better; pain nearly gone; slept tolerably; pulse 96, respiration 26; half a pill to be taken every fourth hour. Evening.—Pain quite gone; omit the pills.

8th.—Continues doing well; there is a slight discharge at the wound; the superficial slough is separating; pulse 95, respiration 25; he was ordered to take two drachms of castor oil.

13th.—Feels quite comfortable; slight tubular breathing can still be heard; no expectoration; pulse 85, respiration 25.

15th.—Does not feel so well; there is more discharge at the wound; still cannot lie on the wounded side; complains of lancinating pains as before in the side; friction sound distinct; pills as on the 3rd were repeated.

16th.—Better; pulse 84, respiration 20; to take the pill every fourth hour. Evening.—Omit the pills.

18th.—He feels very comfortable; there is a small circumscribed

abscess in the parietes of the chest, which discharges healthy pus; pulse 80, respiration 20; it is dressed twice a day with water dressing.

September 1st.—Abscess nearly well; there is some superficial redness over the rib, about an inch external to the wound; on passing a probe, a sinus is found running into it; no bone can be felt.

23rd.—Since the last report he has continued improving; the sinus is healed up; there is no redness or tenderness; and he is in good condition; he does not expand the left side as fully as the right, but it is resonant all over, and vesicular breathing can be heard at the site of the cicatrix; he was discharged.

The above case would seem to show that, however correct it may be as a general rule, to place patients with penetrating wounds of the chest upon the wounded side, yet, that cases may arise in which that practice cannot be adopted, and that bad consequences do not necessarily follow therefrom. In the present instance, the straps of plaster, and the instinctive efforts of the patient, seemed to keep the wounded side, though uppermost, pretty quiet. His complete recovery from so formidable an accident seems to be due to his previously temperate habits and good state of health, the uninjured state of his lung and its speedy reduction; the rest given to the injured part by surrounding the chest, not with mere bandages, but with broad slips of adhesive plaster, which permanently keep their place, and which in this Infirmary are found to be eminently serviceable in treating injuries of the ribs; and combating the earliest symptoms of pleuritic inflammation by calomel and opium, persevered in only as long as the symptoms demanded, and repeated when necessary. With the exception of the two slight inflammatory exacerbations, he may be said to have recovered with scarcely more inflammation than was necessary to effect a cure. It was one of those singular cases, of which not a few are on record, where blunt instruments of a large size, such as the pole of a carriage, &c., have been forcibly thrust into the chest without destroying life; and it is therefore not unimportant that it should be placed on record.

Case of Scarlatina, with remarkable Recovery. By Thomas Fitzpatrick, M. D., Secretary to the Association of the Members of the King and Queen's College of Physicians.

Mrs. C. brought to my house her infant son, aged about six months, on Wednesday, 5th of November, 1850. She stated that he had been perfectly well from birth until the previous day, when he refused food which she had been in the habit of giving him once in the twenty-four hours. The child became remarkably dull and hot towards evening, and lay in a heavy doze. She gave him some castor oil and a warm bath. On examination, I found him lying in a semicomatose state, but capable of being roused; the face was pale, the pupils contracted, the respiration remarkably hurried, without any evidence of disease of the lungs. The bowels were free, and there had

been no vomiting, but the skin was hot, and the pulse very rapid. I directed a leech to be applied to the hand, and ordered one of the following powders to be given to him every fourth hour:—Calomel, three grains; James' powder, a grain and a half; and white sugar, half a drachm; to be divided into six parts. I told the mother that I considered the child was labouring under scarlatina, that convulsions were to be apprehended, and in case they occurred, I advised that the lower extremities and abdomen should be rolled in flannel wrung dry out of hot water, while at the same time the head should be sponged with vinegar and water barely tepid.

I was sent for to see this child the following morning at five o'clock, A. M., as convulsions had come on a short time previously, when the treatment I recommended had been adopted. The patient lay in a complete state of stupor, with the eyes turned upwards, the pupils contracted and insensible to light. The pulse was remarkably quick, and the respiration laboured. The bowels had not been acted on. I directed a purgative enema to be given, the powders to be continued, and in the intermediate hours a teaspoonful of an aperient mixture, consisting of manna, magnesia, rhubarb wine, and carraway water. Although no tooth could be felt advancing, I lanced the gums, principally with the object of detracting blood, having given directions that it should be occasionally wiped away from the bleeding surface and the quantity noted. Ten o'clock, A. M.—The child continues in the same state of stupor; the convulsive action is confined to the right side of the body. A mustard sinapism was applied to the epigastrium. Eight o'clock, P.M. —The stupor is not so marked, nor are the convulsions so frequent; the bowels were twice acted on. I prescribed one of the following powders, to be taken every sixth hour, until the bowels were moved: Mercury with chalk, six grains; rhubarb, ten grains; compound chalk powder, three grains; to be divided into three parts.

8th.—A favourable change occurred about five o'clock this morning; the child took the breast, and now looks about with a placid countenance; pulse 120; a rash is indistinctly observed on the body; towards evening it became more marked, and of a dusky red colour; the bowels were twice acted on during the day; the countenance had become paler, and the extremities were cold. I ordered heat to be kept applied to the legs, and directed a portion of a mixture of chlorinated soda and infusion of cinchona to be given every four hours.

9th.—Marked improvement in every respect, eruption of scarlatina well developed, and of a good colour. A slight redness is observed on the internal fauces, but no glandular enlargement exists. From this period the child went on well, and the disease pursued its usual course without any untoward symptom. On the 13th, I ordered some aperient powders, and gave strict charge that the child should be kept from exposure to cold, and advised that at the expiration of two days he should have a warm bath.

I was again sent for on the 18th. The child was observed to

have been restless on the previous day, became dull towards evening, and passed a bad night. I found him in a semi-comatose state, with a sluggish eye and contracted pupil; eyelids puffed; the face pale, tumid and waxy; no marks of œdema in any other situation; pulse 120; respiration slightly increased in frequency. The bowels were free. I directed a grain of mercury with chalk to be given every fourth hour.

19th.—Nearly in the same state as yesterday, but coma is more marked. Dr. Corrigan met me now in consultation. A blister was directed to be applied to the vertex, and the mercurial powders to be continued in larger doses.

20th.—He vomited frequently during the night; the bowels were once acted on; the secretion of urine is scanty, and, owing to the child's extreme youth, none of it could be collected for examination. Half a grain of calomel was ordered to be given every four hours, and a purgative injection to be administered in the evening.

23rd.—The patient lies in the same condition as last reported; he is comatose, but can be so far roused as to take the breast. Convulsions came on last evening; he had two attacks during the night. On the occasion of my visit, a third occurred. The face became gradually flushed, the head being constantly rotated from side to side, while rapid twitchings of the eyelids were observed; the eyes were turned upwards, and to the right side, and became fixed, the pupils being dilated to the fullest extent. No movement of the extremities occurred: nor was there flexion of the thumb on the palm of the hand. This state continued for about two minutes, and was followed by profound coma.

December 1st.—During the preceding week the child continued in the same state as described in last report. The attacks of convulsion varied in number, the average being eight in the day; occasionally they were ushered in by a scream. Stupor is still profound, and the head is permanently retracted. The child, when placed at the breast, has been generally able to suck.

The treatment since last report has been confined to occasional sponging of the head with vinegar and water, the use of laxatives and enemata, also of counter-irritation to the lower extremities by sinapisms. The convulsions were more severe in character and frequency during last night; for the last twenty-four hours the secretion of urine has been remarkably diminished. I directed a blister to be applied across the loins, an enema to be given, and a tepid douche applied to the head twice in the day.

2nd.—Had a quiet night, only one convulsion; a second occurred at the period of my visit; he passed a large quantity of urine since the application of the blister. A calomel powder was ordered to be given, and a purgative enema in four hours after; the douche to be continued to the head.

8th.—No marked change since last report. The attacks of convulsions varied on different days; the pulse ranged from 110 to 140. The mother, regarding the case as hopeless, seemed averse to medical

treatment, which was, therefore, confined to laxatives and enemata when the bowels became torpid, and to the use of the douche once a day. No convulsion occurred last night; the application of a blister along the spine was now determined on.

9th.—The convulsions have not returned; other symptoms as yesterday; to-day I accidentally observed a remarkable circumstance. The child lay in a comatose state, with the eyelids closed. I raised them up, and happening to press with the other hand on the anterior fontanelle (which was remarkably open), the eyes became, during the pressure, turned upwards, and to the right side, the pupils becoming in some degree dilated. On removing the finger from the fontanelle, the eyes returned to their natural axis; a second experiment exhibited the same phenomena.

10th.—Continues free from the convulsions; bowels regular, passes urine less frequently, but in larger quantity; he appears rather more conscious, and whined this morning while being washed. I directed a teaspoonful of the following mixture to be taken three times daily:—Iodide of potassium, four grains; syrup, three drachms; compound spirit of juniper, a drachm; and water, twelve drachms.

From this period a gradual improvement took place; on the 8th of February, 1851, the report was as follows:—The child is fat and thriving, but the countenance is fatuous; the pupils are in a natural condition, but experiments demonstrate that the power of vision is lost; the sense of hearing appears perfect. The secretions are in a healthy state. The child exercises its limbs, and appears much pleased when hoisted. The treatment adopted was the use of the cold douche to the head every morning, and an occasional purgative.

May 3rd.—Child cut two teeth, and passed through hooping-cough, without any bad consequences, since last report was made. His condition is much the same as before described; blindness still continues; the left eyelid droops a little, and the head looks large. The horizontal occipito-frontal measurement over the ears is nineteen and a quarter inches; general health perfectly good; he goes out every day in a little carriage; seems to enjoy exercise, and cries on being brought back into the house.

July 23rd.—Marked improvement in every respect; he evidently now possesses some power of vision, and takes notice of objects. The mother states, that the first day she observed positive evidence of his sight being restored was on the 14th instant. Sea-bathing has been used every day for the last month, as well as a cold shower-bath to the head each morning.

December 20th.—Continues perfectly well; vision is now perfect; but when an attractive object is presented the eyes are rolled about for an instant in an irregular manner before the child fixes them on, and attempts to take hold of it. He is beginning to speak and walk. The countenance displays more intelligence; he now discriminates persons; the exercise of these powers has, however, been observed only within the last month.

Report on the "Tissu Cellulaire Artificiel" of Melsens. By Robert D. Lyons, M.B. T.C.D., M.R.I.A., &c.

The results of chemical investigation have made us familiar with the elementary composition of almost all the organised products which constitute the structure of animals and plants, and even in those instances in which our knowledge in this department has not yet reached the limits of scientific accuracy and precision, we may confidently anticipate that the labours of the numerous inquirers who are now actively engaged in prosecuting researches in organic chemistry, will, at no very distant period, fill many of the more important *lacunæ* which may still be pointed out. On the other hand, histological inquiry has revealed to us the intimate structure and minute organisation of every tissue, and with the aid of the microscope we can now, with perfect facility, study the ultimate form of every constituent element of the vegetable or animal, which possesses distinct morphic properties. What is still to be desired on this side of the general inquiry into the nature of organic bodies may be hopefully looked forward to; its accomplishment will, no doubt, before long reward the industry of the present generation of zealous and intelligent micrologists. But while chemistry thus informs us of the composition of organic bodies, and their structure is revealed to us by the microscope, we have yet much to learn with regard to the particular operations by which definite forms are assumed by the elementary tissues. Here, indeed, exists a broad and deep *lacuna*, which separates the results of the chemist and the micrologist. It is true, that bold speculations have attempted to bridge this chasm; yet, notwithstanding what we owe to the splendid generalizations of Schleiden and Schwan, no portion of organic science is more incomplete, or presents so many undetermined problems.

Many considerations concur to establish the probability of the proposition, that the fluid state is necessarily the first in which the elements of a tissue must exist previously to their undergoing a morphic determination, precipitation, histomorphosis, or whatever other analogous term may be assumed to denominate the simplest change which may be supposed to occur in the passage of a perfectly amorphous fluid into a tissue of definite shape. The chemical properties of the fluid are familiar to us; so likewise are the forms which it assumes as a distinct tissue; but what those laws are, in obedience to which the latter condition results from the former, constitute, I think, one of the most obscure, and at the same time intensely interesting questions which can be found in the whole domain of organic science. What are the forces brought into play to determine not only the formation of a tissue in an amorphous fluid, but also to give it peculiar and characteristic properties? These are questions which spring up at every moment when we venture to contemplate the very interesting but mysterious phenomenon of *histogenesis*, a general term which may be used to designate the subject under consideration.

Under the head of histogenesis many of the most obscure and difficult problems are included. Thus, for instance, we may inquire: what it is that determines the transudation of a blastema? what, the particular nature of this fluid, which cannot, in all probability, be identical in any two normal tissues, not to speak of those of pathological origin? And this latter question, it may be remarked in passing, bears a very great analogy to that which demands a solution of the obscure physiological problem, why the liver secretes bile, the kidney urine, &c. &c.

While science has still to deplore the extremely imperfect and unsatisfactory condition of this portion of its domain, we are yet not altogether without indications as to the direction in which research may be prosecuted. And in more than one instance it is consoling to know that an *empirical law* has been ascertained, which, as is familiar to observers, is only second in value to the true scientific law, whose discovery it has so often preceded in other branches of science. Thus we owe to Ascherson a knowledge of the interesting fact that the contact of two homogeneous fluids, oil and albumen, results invariably in the immediate production of morphic elements. And more recently still, the observations and experiments of M. Melsens have established the possibility of one of these fluids undergoing distinct and very remarkable histomorphosis. The experiments of this observer must be looked upon rather as a highly interesting exegetical study,—furnishing a valuable amount of inferential and collateral evidence, capable, to a certain extent, of application to the explanation of the changes which occur within the system,—than as a direct contribution to our knowledge of these operations.

On former occasions the readers of this Journal have been furnished with the views of the most distinguished modern physiological pathologists, as to the relative importance of the part played by albumen and fibrine in the formation of tissues. The former has so much interest in its relation to histogenesis that every thing concerning its chemical history cannot but be received with consideration, and I shall make no apology for introducing some lengthened extracts from M. Melsens' valuable and highly original memoir. As will be seen, the results of this inquirer bear more especially on the action of purely physical causes on albumen, in combination with various salts by which it is not precipitated.

"We know," says M. Melsens, "that many feeble acids do not precipitate albumen from its solution; my experiments have reference especially to the trihydrated phosphoric and acetic acids; this ceases to be the case when albumen is present with those salts which have no apparent chemical action on it, the re-actions change, for acetic acid, as well as the phosporic, with their equivalents of base, and some acid phosphates as well, precipitate it more or less completely. I know of only a single case in which albumen is precipitable by acetic acid, namely, when it is acidified by sulphuric acid in the soluble compound designated by Berzelius, sulphate of albumen. As for the

action of acetic acid on pure albumen, obtained by the process of M. Wurtz, it is entirely different, as we shall see further on.

"The following is the process by which I prepare the salified solution of albumen: The white of an egg is mixed with its volume of water, and filtered; this constitutes the *normal solution of albumen*, with a specific gravity of about 1020. The filtered liquid is saturated with salts, which are added in excess, after which the fluid is filtered again, to separate the excess of salts; the fluid resulting from this second filtration may be denominated the *normal saturated albumen*. The normal albumen saturated with chloride of sodium has a specific gravity of about 1200.

"My experiments have been made with almost all the salts which are without an apparent action on albumen, as well as with those which begin to precipitate it, but whose precipitations are soluble either in an excess of albumen or of the salt; for some salts of baryta, of lime, of magnesia, and of ammonia, &c., the albumen must be left in excess, for in saturating it with these salts it is precipitated, if they are added in excess; when we wish to examine the re-actions in this case, it is necessary to add, little by little, the solution of normal albumen, until we obtain the resolution of the precipitate first formed. I will not pronounce on the nature of the precipitates obtained; but it will appear evident that we must, in the generality of cases, admit that the albumen is precipitated in consequence of a particular physical disposition of the liquid; that if at times the precipitation does not occur immediately, in dilute liquor for example, agitation may cause a troubled condition of the fluid, as occurs in precipitation, crystallization, solidification of water, of sulphate of soda, of phosphorus, &c. * * * Tribasic phosphoric acid precipitates normal albumen saturated with salts; certain salts, amongst which are borax, phosphate of soda, acetate of soda, acetate of potash, form an exception to this rule; however, if the fluid be agitated with a glass rod, a troubled condition is slowly produced by the mechanical action. The solutions of albumen with other salts are all precipitated by phosphoric acid; these precipitates are soluble in an excess of the acid. The presence of the salts, therefore, permits us to make with albumen and the trihydrated phosphoric acid an experiment which requires, with normal albumen, the monohydrated phosphoric acid which precipitates it, and the trihydrated, which dissolves the precipitate formed."

These examples will be sufficient to show the nature of the results which have been arrived at by M. Melsens; similar experiments were made with a variety of other substances, such as corrosive sublimate, ether, alcohol, creasote, &c., but it is unnecessary to follow out their details. I shall, therefore, pass to the consideration of a series of experiments which to many will appear still more conclusive, as to the action of physical causes on albumen.

"If," says M. Melsens, "after the experiments which precede, I am induced to believe that the particular physical constitution of the liquids plays some part in the precipitation of albumen, those

which follow cannot leave the least doubt as to the action of agitation.

"Some very dilute liquids remain limpid until beaten with a glass rod, when they become troubled, and immediately parcels of fibres may be seen to form under the influence of agitation; under the microscope these appear, as very distinctly organised fibrous forms, which, by juxta-position and felting together, constitute actual membranes. We have thus a phenomenon conformable to the production of mineral precipitates by the influence of agitation."

I shall only briefly notice some of the remaining experiments. A current of air was passed through a solution of normal salified albumen, sufficiently dilute not to allow of the froth passing out of the vessel; this froth was seen to be transformed into a solid body, insoluble in ammonia, potash, water, or dilute acids. To obviate two objections which might be started to this experiment, air saturated with the vapour of water, and hydrogen purified by caustic potash and saturated with vapour, were successively employed. Lastly, to avoid all sources of error, a solution of albumen diluted with water was agitated *in vacuo*, by converting the vessel into a sort of water hammer, after expelling the air by heat and an air pump, the orifice being subsequently hermetically sealed. The solution, perfectly limpid at first, became troubled after a few shakes, and a membrane was rapidly formed.

The solid body thus formed from a limpid solution of albumen by the simple effect of agitation, was subjected to microscopic examination by M. Gluge, from whose report I shall make a few extracts:

"The albumen of the white of egg, solidified by mechanical actions, resembles false membranes, and even serous. It is presented to our view under the form of membranes covered with granulations of from $\frac{1}{2}$ to 1 millimetre in diameter, white, semi-transparent, about $\frac{1}{4}$ or $\frac{1}{2}$ millimetre thick, and sufficiently elastic. With a magnifying power of 300 we can distinguish an amorphous substance finely punctated, in which are found fibres, sometimes isolated, sometimes united in bundles, like the fibres of cellular tissue, more often easily isolated and elastic. Their diameter varies from $\frac{1}{800}$ to $\frac{1}{400}$ of a millimetre: more rarely there may be seen large and transparent fibres, analogous to those which are met with in fibrine. In the middle of these fibrous bundles may be observed granulations composed of little globules of $\frac{1}{400}$ to $\frac{1}{800}$ of a millimetre in size, and enclosing some bubbles of air. These globules are sometimes very regularly grouped, and then form rounded masses. The fibrous aspect of the solidified albumen differs from that which albumen possesses when transformed into pellicles, thin, opaque, and much less elastic, such as are obtained by the process of Ascherson. These last present folds, and not fibres fully developed like the former: they appear rather to be formed of very small granules."

I have introduced these lengthened extracts from M. Melsens' memoir from a conviction of the great interest attaching to the sub-

ject, and from the light which his experiments throw on the very obscure subject of histogenesis, it is to be hoped that they will be further followed out[a]. The primary stages of the formation of the embryonal tissues require a very accurate investigation, and we possess as yet but little data to form an opinion as to their primary mode of origin. In his paper on the structure of the uterus, Kilian observes, that the coagulable blastema of the embryonal tissues, especially of muscles, possesses the property of contracting, through attenuation and desiccation, while, at the same time, in the fluid portion of the preparation, delicate, round, or angular discs, like thin flakes of fibrine, begin to appear. They sometimes enclose a nucleus, and though pale and delicate at first, like young cells, become subsequently like horny epithelial scales, being no longer soluble in acetic acid, which only renders them paler[b]. It is much to be regretted that the records of physiological research during the past few years afford but very scanty materials for determining with certainty any of the laws which preside over the primary formations of tissue.

I had recently an opportunity of inspecting a very beautiful and large specimen of albumen solidified by the process of agitation, in the possession of M. Melsens. To the naked eye it presented the appearance of a membrane of a whitish colour, formed by the interlacement of parcels of fibres, which enclosed spaces of an irregular shape; it was tolerably tough, dense, and resistent.

M. Melsens was so kind as to present me with a small portion of the preparation, which I submitted to a most careful microscopic examination on my return to Dublin, and I had thus the satisfaction of verifying, in the most complete manner, the results of M. Gluge's investigations. As my examination was conducted with powers higher than those employed by this eminent micrologist, and as consequently some of the more minute details were better shown, perhaps I may be allowed to append a brief statement of the appearances seen in my examinations. Though the specimen has been preserved now for several months in spirits of wine, I do not find that it has thereby lost any of the characters detailed in M. Gluge's report.

A fragment of the solidified albumen, teased out with needles, placed on a glass slide, and covered with a thin slip in the usual way, was placed in the field of a very fine Ross in my possession; the glasses employed were the $\frac{1}{8}$-inch objective, and the eye-piece A, registered by Ross as giving, in combination, a magnifying power of 420 linear, which is, I think, certainly somewhat over the actual

[a] In the last Number of a British contemporary Journal an exceedingly brief extract is made from the Memoir, to which a short editorial statement is appended. I doubt if the writer had seen the original, as it is impossible to understand how, if he had perused M. Melsens' account of his exceedingly careful experiments, he could be induced to make such remarks as to sources of error or deception arising from the presence of fragments of the albumen membranes, or the chalazæ. The double process of filtration employed completely prevents such an error.

[b] See Canstatt's Jahresbericht, Bd. i. p. 24. 1850.

magnifying power; and indeed I may observe, in passing, that repeated measurements with the stage and ocular micrometers (Robin's method[a]) have satisfied me that the registered magnifying power of all glasses, both English and foreign, is considerably overstated by the makers, from the want of a perfectly true method of estimating the magnifying power, which is still a great desideratum in micrology.

The specimen examined with the glasses above named presented four distinct kinds of elements. Firstly, a granular base; secondly, fibres, which were flat, round, straight, curled, isolated, or interlaced in various ways; thirdly, spherical bodies of different sizes; and lastly, flat, scale-like particles, these being the least numerous constituents.

The granular base constituted a very considerable proportion of the entire specimen, but did not appear to be uniformly disposed throughout it, as in some portions it formed nearly the entire, while in others it was almost altogether replaced by fibres.

The solidifying force would thus appear not to have acted with uniformity. To determine what modifications of it produced granular matter,—what fibres,—what again caused the formation of the little spherical bodies,—are questions, perhaps, of too delicate a nature to admit of ready solution. Could we arrive even at an approximate explanation, a great step would be achieved in the history of the obscure process of histogenesis.

The fibres constituted a very large element; the majority of them presented an extremely clear, decided, and *clean* outline. Many of them lay parallel to each other, and, as far as they could be traced, formed straight lines. Others, again, terminated in rapid curves; in one little parcel, which was very well shown, and which I had thus an opportunity of observing very attentively, they curled and interlaced with each other in a very graceful manner. In their general disposition, as well as in size and shape, they bear a very close resemblance to the fibres of the yellow elastic tissue, for which I make no doubt they would have been readily mistaken by any one casually looking at them through the microscope. Some masses of the fibres lay isolated; others were to be seen taking an origin in the granular base, where their commencement could not be well defined; others, again, lay in contact with the scale-like bodies, to be presently noticed. To me, however, the most interesting of all the structure observable in this preparation, are the spherical bodies. With the exception of the scales, they were the least numerous. I observed them in two situations, in most abundance on a square-shaped mass of the granular base, and in another portion in contact with fibres. The smallest bodies of a spherical shape, but not those to which I shall more particularly refer, were about the size of the well-known oleo-albuminous granules, and closely resembled them in their reflec-

[a] For an account of which see "a Retrospect of the Progress of Microscopic Investigation," in the Number of this Journal for August, 1850.

tive properties. The *spherical bodies* were nearly uniform in size, grouped quite close to each other, and presented all nearly similar characters. They showed a dark border, their interior varied with the amount of light transmitted, but under all conditions of light, both as to intensity and obliquity, they presented a sort of nucleus, which in all was of a long, elliptical shape, though the bodies themselves appeared as nearly as possible spherical. This nucleus was in length equal to about one-half the diameter of the sphere, and in breadth about one-eighth. What was the nature of these bodies? They were certainly not either spheres of oil or bubbles of air; there was not the slightest probability of the former substance being present; air bubbles they also could not be; the specimen had been at rest in spirit for a very considerable time, while as more positive evidence of their nature, I would adduce the peculiar nucleus, which in all was oblong, and did not disappear under any conditions of light. May we then regard them as nucleolated nuclei, or small nucleated cells? I confess that I can see no objection to this view; it is only to be regretted that it in no way throws light on the relation of the containing body to the contained, as to priority of origin, or necessary connexion of the one to the other. It is extremely interesting, however, to learn that albumen is of itself capable of undergoing a celluloid development. The last objects I shall notice, as observed in the preparation, are the scale-like bodies. There was only one situation in which I clearly recognised a group of them, though others existed scattered here and there. The group of scales was in close proximity to a parcel of fibres, and lay partly on a mass of the granular base. They appeared under the form of delicate laminæ, somewhat of a quadrangular figure, their borders irregular and serrated, and some few presented an imperfect nucleus; granules were likewise to be found on the surface of two or three. Were these of the nature of cells? This is a question which I cannot decide; it is possible they may be merely the result of a process of *flaking*, or of the fusion of granules precipitated together in small masses.

I have dwelt thus at length on the microscopic appearances of this highly interesting artificial preparation, because it seems to me that the importance of the subject cannot be exaggerated. It gives us indications of paths of investigation to be followed; and I will freely confess that the perusal of M. Melsens' memoir and the results of my examination of the specimen which he so very kindly placed at my disposal, have filled me with the highest hopes of seeing before long some large advances made in this hitherto almost unworked field of investigation. Recent chemical researches into the physiological history of organic bodies have done much to establish the paramount importance of albumen; and with the evidence now furnished us of its capability of undergoing histomorphosis into at least three distinct structural elements, I conceive that a most powerful stimulus has been given to experimental results into the foundation of the organic compounds, while we owe to M. Melsens

clear indications of the road to be followed. I feel that I owe some apology for dealing at such length with a subject already ably handled by so eminent a micrologist as M. Gluge. I will trust, however, to his kind indulgence to pardon the extent of my observations, which have solely for their aim to bring more prominently into relief what appeared to me the most interesting points of these admirable experiments. I may further add, that during a recent visit to Brussels I had an opportunity of examining a very beautiful specimen of fibrine, prepared by M. Melsens by the process of continued washing; and I can entirely corroborate his statements as to its striking white colour, when perfectly freed from fragments of blood-globules, and all traces of hematosine.

On the Differential Diagnosis of Inflammation of the Pancreas. By Dr. Franc Lussanna.

In a very careful history of a case of this disease, occurring in a countryman, a patient in the hospital, of spare habit of body and bilious temperament, an extraordinary flow of an excretion resembling saliva was observed, similar to what takes place in individuals under the influence of mercury. This secretion was viscid, puriform, and presented bloody streaks of a brick-red colour, and yet the most careful examination of the cavity of the mouth failed to show any abnormal condition of the parts contained in it; nor was any alteration to be discovered externally in the form, size, or consistence of the salivary glands. The sense of taste was not interfered with, the temperature of the body was generally and remarkably lowered, the pulse was small, slow, and laboured; the expression of countenance indicative of abdominal distress; the patient had frequent inodorous, insipid eructations, which he encouraged in order to relieve a pain and sensation of weight in the epigastric and hypochondriac regions; this pain was not increased by pressure; the bowels were confined, a sense of oppression, tightness, and suffocation were complained of for some hours after taking food,—during digestion. The author, bearing in mind the experiments of Bernard on the uses of the pancreatic juice in digestion, examined the alvine evacuations, and discovered in them several whitish-yellow particles resembling fat or congealed oil; these particles were always found floating, they left a greasy stain on paper, and evidently corresponded to the butter or the fat of broth and meat which had been swallowed; this continued for about three weeks, the fatty particles being more abundant after the use of purgatives; the other alimentary substances swallowed were also recognisable. The treatment consisted in blood-letting, active purgatives, and the administration of tartar emetic. After this period the pain gave place to a feeling of tension, as if a bandage were tightly pressing the abdominal parietes, between the xiphoid cartilage and the umbilicus, towards the back, and in this region a deep-seated nodulated

tumefaction was perceptible to the touch. Leeches, frictions with iodine, extract of hemlock, soap, and bitter deobstruent decoctions were now employed, followed after a time by mercurial inunctions and salt-water baths. The disease lasted three months; after this the fatty matters were no longer to be found in the fæces, the sensation of weight, producing laboured breathing and a feeling of suffocation, had disappeared; the deep-seated supra-umbilical tumefaction had decreased, the appetite was restored, but the viscid and dense ptyalism (the excretion being, however, less tinged with blood), the coolness of the skin, the depression of the circulation, the emaciation and the wasted appearance of the face continued for a time, but in their turn gradually vanished. This case, then, as well as two others seen by Bernard, would go to prove that the most prominent and characteristic symptom of pancreatitis is the fatty or oleaginous nature of the evacuations. Dr. Lussanna endeavours to show that the observation by Dr. Verga[a] of the fatty degeneration of a pancreas, with a simultaneous tendency to a similar degeneration in the other abdominal viscera, is not inconsistent with these facts. He points out that probably the mode of living, age, climate, particular kind of food, &c., may remedy the evils arising from a suspended or deranged state of the pancreatic functions, as we know occurs with other functions, and supports his views by referring to the results obtained from comparative physiology and animal chemistry, and by putting forward the law established by Liebig, that starch, sugar, and all the various principles of ternary composition habitually entering in great proportion into the food of exclusively herbivorous animals, may be transmuted into fatty matters by losing, under the vital influence, a part of their oxygen.—*Giorn. Veneto di Sc. Med.* p. 766, T. II.—*Bulletino delle Scienze Mediche Bologna*, August and September, 1851, p. 182.

Case of Hydrophobia, treated with Atropia, in the Greater Hospital of Brescia. By Dr. Fran. Richiedei.

Giacinto Boccolo, ten years of age, of sanguine temperament and robust constitution, was bitten in the upper lip by a rabid dog; the wound was cauterized in three hours after the accident, and quickly healed by the first intention. Twenty-six days after, he was admitted into hospital, labouring under the following symptoms:—extreme dejection; some flushing of the face; rapid and constant motion of the eyes; a sense of constriction in the throat, in consequence of which he declared that he was unable to swallow; tongue rather whitish; breathing slightly laboured; pulse almost normal. He was hungry, and with difficulty swallowed some spoonfuls of panada, but refused to drink. When presented with some water, contained in an earthen vessel, he became violently excited, apparently enraged, throwing his eyes about in terror, and raising himself in the bed as

[a] Gazz. fed. Lomb., No. 18, 14th July, 1851.

if about to vomit; there was, however, neither foam nor pustules under the tongue. He was ordered a grain of atropia, dissolved in spirits of wine, and made with crumb of bread into twenty pills; of these he was to take one, at first every three hours; and afterwards at shorter intervals. Intolerance of light soon supervened, and during the first day he passed neither urine nor fæces; the day after, his pulse was more frequent, and as he refused to take his medicines, frictions were directed at each side of the neck with the following ointment, and a blister to the epigastrium, to be dressed with the same: pure atropia, two grains; hog's lard, half an ounce,—to be used in two days; a purgative enema was administered. At the end of six hours his dejection and the intolerance of light and air were increased; at the end of a second similar period he was much worse; he gave no sign of feeling; no longer answered when spoken to; his countenance was wildly distorted; he rolled his eyes incessantly about, twisted his lips, frequently appeared to weep, slavered with his mouth, but was less sensitive to light and air. Two inunctions had been performed; recourse was now had to a third, and the blister was dressed. In the morning of the day following he was delirious; he had convulsions; his eyes were suffused and glassy; his respiration difficult; his pulse was very small and extremely rapid. A strong dilatation of the pupil was the only phenomenon referrible to the atropia; inunction was again employed, the blister was dressed, but death soon closed the scene; shortly before he expired the wound had partly re-opened. In this instance, however, remarks the author, the violent convulsions, the furious delirium, the loud and dreadful screams, recorded in almost all accounts of cases of hydrophobia, did not occur. Might not this, he asks, be in consequence of the beneficial effects of the atropia?—*Gazz. Med. Lomb.*, 1851.—*Bulletino delle Scienze Mediche di Bologna*, August and September, 1851, p. 179.

[We have thought this case worth recording as an illustration of the failure of a preparation not before tried, that we are aware, in the treatment of a malady which has as yet resisted all the resources of medicine. Richter and Bayle have quoted authorities in favour of the efficacy of belladonna in this disease, but we are disposed to agree with Pereira, that their statements are not to be depended on. The case is also interesting in reference to the shortness of the period of latency.]

Case of Infra-Maxillary Excision of the Tongue. Reported by Dr. Giuseppe Giammattei.

Maria Domenica Ranieri, aged fifty-five, a married woman, of naturally sound constitution, and mother of several children, was admitted into the hospital of Lucca, stating that, six years previously, she had perceived a tumour, about the size of a small pea, on the right border of the tongue, connected with the anterior pillar of the velum pendulum palati. This tumour was hard, and was quite indolent, on which account it had caused her but little anxiety. It

had, however, steadily, but slowly increased, until, at the time of her admission, it was more than an inch long, and at least half-an-inch in breadth. Some months before her application at the hospital it had ulcerated, and had, for about eight months, given considerable pain. This consisted first in a burning sensation, which afterwards changed to a feeling of pricking, occasionally giving rise to great annoyance, and extending from the tumour to the right ear.

On examination I was at once convinced that the tumour was cancerous: its hardness, irregularity, long continuance, and slow progress, the character of the pain complained of, the ulceration, and the appearance of the ulcerated tubercle, were sufficiently striking to remove all doubt as to the nature of the case. Obvious, however, as were the character of the tumour and the indications of treatment, it was far less easy to decide on the mode of extirpating the disease most likely to be free from the dangers attending its complete removal.

Avoiding a minute description of the trials I made to ascertain if it was possible to remove the entire tumour through the mouth, by which I convinced myself of the impracticability of this proceeding (on account of the rapid progress the disease had made, since the admission of the patient, towards the base of the tongue, while it had not at all advanced in the direction of the apex), as well as of the impossibility of remedying the bad effects of this operation, I may briefly state that it was, on consultation, determined to perform the excision in the supra-hyoidean region, it being considered that the method designed and carried out by Signor Cavaliere Giorgio Regnoli, the distinguished Professor of Clinical Surgery in the University of Pisa, was the only one capable of insuring the complete removal of the disease.

Having made the first three incisions, dissected off the edges, penetrated into the cavity of the mouth, and cut through the supra-hyoidean layer of muscles, I caught the tongue and brought it out on the anterior region of the neck; here, placed on the stretch, it was in its entire extent completely under control—in a word, I closely adhered to the plan proposed by Signor Regnoli[a].

[Regnoli's operation is thus described by Chelius[b]:—

"Three cuts were made in the form of T, from the lower edge of the point of the chin to the tongue-bone, and on either side to the front edge of the *m. masseter*. The skin, cellular tissue, and *m. platysma myoides* were dissected off; a pointed, straight bistoury thrust behind the chin from above downwards, the insertions of the *m. geniohyoidei* and *genioglossi* were cut through, and the mucous membrane of the mouth divided. With a button-ended bistoury the insertions of the

[a] Vedi nuovo metodo per l'estirpazione della lingua immaginato ed eseguito dal prof. Giorgio Regnoli ed esposto dal Dott. Andrea Ranzi. Pisa, Pieraccini, 1838.
[See a new operation for the removal of the tongue, invented and performed by Professor Giorgio Regnoli, and described by Dr. Andrea Ranzi].

[b] A System of Surgery, by J. M. Chelius, &c., translated from the German by John F. South. London. 1847. Vol. ii. p. 779.

m. digastrici and *mylohyoidei*, and the mucous membrane of the mouth, were now cut through, up to the pillars of the soft palate. After tying a few vessels, the tip of the tongue was seized with Museux's forceps, and drawn down to the lower opening, so that the whole tongue was seen on the front of the neck, and pulled well down with the fingers. Several ligatures were now applied with a long curved needle around the root of the tongue; the tongue cut off with a small pair of shears in front of the ligature; its stump returned into the cavity of the mouth, and the wound closed. Ice was put into the mouth to keep down the inflammation."]

Having advanced so far, I included the cancerous tubercle in a semi-elliptical incision, which I made with a convex-edged knife [coltello panciuto] and removed it. In performing this incision, the lingual artery, as may be supposed, was cut, but I easily tied it by passing a thread with a fine needle through the tissue of the tongue round the artery, in such a manner as to include as little as possible of the surrounding parts. I then proceeded to remove a diseased portion of the pillar of the palate, which I accomplished by seizing the indurated pillar with the fingers of the left hand, and cutting off the hardened portion with a button-ended bistoury, introduced with the guidance of the fingers; then bringing the knife forward, I excised another indurated tissue which presented itself on the posterior part of the inferior alveolar arch. It was necessary to apply the actual cautery to the wound made in excising the affected portion of the pillar, in order to stop a hemorrhage, which, although slight, could not with safety be left unchecked. Having done this, and replaced the tongue in the cavity of the mouth, I proceeded to re-unite the edges, which I thought it most advisable to do by means of the interrupted suture, assisted by strips of adhesive plaster and bandages.

Unwilling to trouble the reader with unnecessary details, I shall merely state that re-union was rapid; that the cicatrix was regular, and, after a time, scarcely perceptible; that no untoward symptoms arose; that, on the second day after the operation, the patient was able to swallow some spoonfuls of broth; that, on the fourth, she began to depress the jaw, and to articulate some words; and, finally, that on the fourteenth she was quite recovered.

It is evident that I deviated from Signor Regnoli's operation only in the following points, viz.:—In tying the lingual artery after the excision of the tumour, instead of passing three ligatures round the entire portion of the tongue to be removed; in using a knife in preference to scissors, in the excision of the cancerous tumour; in refraining from cauterizing the super-hyoidean muscles which had been cut; and lastly, in employing sutures to unite the edges of the wound. I had reason to be gratified with the result of these slight modifications of the operation; since, while there was not the least threatening of secondary hemorrhage, although the divided muscles were not cauterized, I obtained immediate union with a regular and scarcely perceptible cicatrix, and, above all, because recovery was not so pro-

tracted as would have been the case, if I had renounced the advantages of immediate union.

The success which has attended the greater number of submaxillary extirpations of the tongue induced me to reflect on the reasons why this operation has not hitherto been better known in Europe, and I have been unable to trace this serious oversight to other causes than our own *esteromania*, a mistaken national pride, and the little interest taken by foreigners in anything done in Italy. May my feeble voice lead the cultivators of the healing art to have recourse to it in cases where it may be indicated!—*Gazzetta Medica Italiana Federativa Toscana*, 28 October, 1851, p. 554.

[We think it right to give the Italian surgeon's description of the above operation; but to us it appears that the ordinary mode of removing even large cancerous tumours of the tongue through the mouth (if it be prudent to excise them at all) is not alone much more feasible, but greatly to be preferred. Our experience in the treatment of wounds in the infra-maxillary region, acquired in cases of attempted suicide, induces us to place but little reliance or hopes of union by the first intention in any large wound made into the mouth through this space.]

On some Effects of Atropia and of the Sulphate of Veratria. By Dr. Giacinto Namias.

Following the example of Dr. Lussanna, the author tried atropia in the treatment of epilepsy, in the Civic Hospital of Venice, to which he is chief physician. The dose he employed was the twenty-fourth part of a grain, five or six times a day, dissolved in water by means of acetic acid, and he satisfied himself that this alkaloid is an efficacious remedy in many spasmodic diseases. He has also applied it by inunction on the sound skin, as recommended by Dr. Closio, in the proportion of a grain to a drachm of lard. The phenomena produced by its action when the dose used is too strong are, dilatation of the pupil, indistinctness of vision, confusion of ideas, slowness in answering, difficulty of certain voluntary movements, a sense of weakness, and occasionally vomiting. And since in epilepsy, as well as in many other forms of nervous spasmodic affections, particularly when of long standing, two etiological elements generally co-exist, viz., a permanent morbid condition or organic lesion, oftentimes only recognisable by the anatomist, and a peculiar predisposition in the nervous fibre determining the convulsions, atropia, by modifying the nervous susceptibility, will assist in diminishing the intensity and frequency of the attacks, and will thus give time for the cure or alleviation of lesions of the first class; and when an abnormal condition of the fibre exists alone, will be sufficient to eradicate the disease. The illustrious Bufalini, too, observes the author, arrived at the conclusion that tetanus consists of two elements, an exciting cause and a peculiar modification of nervous action, a special *neurokinesis*. The author believes atropia to be alway

useful in spasmodic affections; whether it be administered internally or applied topically, its action, when properly used, is not only safe but decidedly soothing.

As to the sulphate of veratria, recommended by Magendie in dropsies as an exciter of the action of the kidneys and bowels (effects not verified by Namias), he says that it acts upon the cutaneous surface, in various parts of which it produces a sense of pricking, formication and heat, which latter sensation extends from the throat and epigastric region to the skin itself. Of the sulphate of veratria, which is very soluble, the author gave from half a grain to two grains, in six ounces of water daily, in neuralgic affections and in rheumatic pains.

This salt excites the pulse, and in general produces perspiration, with alleviation of the pains; it is contra-indicated if acute inflammation or fever be present, causing in such cases vomiting, frequently diarrhœa, tormina, and prostration of strength. In order to increase its good effects, the author, at the same time that it was given internally, directed the ointment of atropia to be applied externally, and quotes cases showing the beneficial results of this mode of treatment. Its external application gives rise to the same phenomena as its internal exhibition. The author is engaged in investigating chemically the cutaneous exhalations in persons treated with veratria, and from such a man science may expect much.—*Giorn. Ven. delle sc. Med.* 1851.—*Bulletino delle Scienze Mediche di Bologna*, August and September, 1851, p. 178.

On Chromic Acid as an Escharotic. By Dr. Fromer.

Chromic acid has been, on the recommendation of Dr. Heller, tried in many cases as an escharotic, in the syphilitic wards and clinique of Professor Sigmund; the results hitherto obtained would justify a further trial of it in cases in which a deeply penetrating, gradual caustic, and one constant in its effect, would be indicated. When employed in substance, its action is exceedingly slow and gradual, occupying many hours; nevertheless in intensity it exceeds that of the caustic alkalies. In extremely concentrated solution (to insure saturation, a slight excess of crystals should be allowed to remain undissolved in the fluid) its action is less penetrating and less gradual; but, at the same time, it is more continuous than that of all other known caustics; on the other hand, the more dilute the solution, the more transient and superficial is the effect. The facility with which its action can be thus graduated renders it in all cases a suitable escharotic.

In order to test its action, the first experiments were performed on new growths and marks; viz., on pointed and broad condylomata, occupying the genitals and inner surface of the thighs in different individuals, and varying in thickness from two to eight lines; and in their longest diameter from half-an-inch to two and a half inches.

Modes of Application.—The surrounding parts having been protected by folds of lint, strips of adhesive plaster, &c., the chromic acid in substance (mixed with sufficient water to form a paste) is spread with a spatula on the part to be cauterized, so as to form a layer scarcely a line in thickness, which is covered with lint, kept in its place by adhesive plaister. The concentrated solution is applied by means of a glass rod, a pencil of asbestos, or, if necessary, a hair pencil (which, if immediately washed, can be employed again); it is left exposed for a few minutes, and then covered with dry lint.

Objective and Subjective Phenomena.—Chromic acid in solution communicates its colour unaltered to the parts moistened with it; after a few minutes the colour becomes gradually darker, changing from light brown to dark brown. The parts to which it has been applied remain moist, bright, and glossy for from ten to fifteen or twenty minutes; the acid then gradually dries, and changes the surface it rests on to a dark brown, partly bluish black, dry elevation, which slowly becomes thicker, and after forty-eight hours either falls off spontaneously, about one or two lines in thickness, or can easily be separated in its entire extent. The ulcerated surface left by the scab is generally covered with a firmly attached greyish-white exudation, which, in from twenty-four to forty-eight hours gives place to clean granulations, of which the cutis forms the substratum. The scab formed after the application of undissolved chromic acid is thicker, adheres longer (from five to six days), and the loss of substance is very much more considerable. The inflammatory symptoms in the surrounding parts are very trifling, the redness is scarcely two or three lines in width, and there is little or no swelling.

If chromic acid be applied to sound parts, a moderate sensation of burning commences in ten or fifteen minutes after the application, increasing for three or four hours, and then diminishing for about an equal space of time. Its application to ulcerated or excoriated parts excites similar sensations instantaneously; these likewise increase for four or five hours, seldom remain stationary, and again diminish during an equal period.

Undissolved chromic acid causes severer and more permanent pains; these are also more violent when the cutis vera itself, and not morbid growths, is cauterized, and for this reason each succeeding cauterization of such growths is attended with more pain than the preceding one. The pain does not disturb the patient's sleep, is incomparably less than that caused by other caustics, such as sulphuric or nitric acid, nitrate of silver, nitrate of mercury, corrosive sublimate, caustic potash, Vienna paste, &c. The solid chromic acid, on account of its penetrating action, should be employed but seldom, and then with extreme care; and for the same reason the concentrated solution, which has been found sufficient to destroy condylomata of seven lines in height in six applications, is to be preferred.

According to the experiments of Dr. Heller, all organic compounds are soluble in the easily deoxidizable chromic acid, their ultimate elements being raised to a higher degree of oxidation, and

partly uniting with the acid. An elevated temperature accelerates this process. Smaller animals (mice, birds, &c.) were so completely dissolved by chromic acid within fifteen or twenty minutes, that no trace of their bones, skin, hair, claws, or teeth could be discovered.

Chromic acid would thus appear to be not only a gentle and gradual escharotic, but also a complete and rapid solvent.—*Wiener Medizinische Wochenschrift*, 1851, No. VIII. p. 119.

Special Pharmacopœia for Diseases of the Skin. By Alphée Cazenave, M. D., Physician to the Hôpital St. Louis, Paris.

[Under this title, M. Cazenave, Editor of the Annales des Maladies de la Peau, proposes to bring in succession before his readers the principal therapeutical agents which have been employed in the treatment of diseases of the skin and of syphilis, distinguishing those whose efficacy has been best established, and adding the results of his own experience; interrupting, however, this bibliographical review whenever it may be necessary to make known newly-discovered remedies; and from the deservedly high character which he has acquired as a dermatologist, we feel confident that a translation of his observations, with occasional editorial notes, cannot fail to be acceptable to our readers.]

Acids.—Acids have been chiefly employed in therapeutics, either in a state of great dilution or as caustics. They are used in both ways in the treatment of diseases of the skin and of syphilis, in which they are moreover employed in various forms as topical applications. The *dilute mineral acids* especially, are given internally in a great number of eruptions, amongst others, in *psoriasis;* but chiefly in affections complicated with pruritus, or accompanied by an oozing discharge. M. Cazenave frequently makes use of the following formula:—

Dilute sulphuric acid, by weight, fifteen grains; infusion of soapwort[a], sixteen ounces; syrup of capillaire, one ounce. Mix; let three glassfuls be taken every day,—chiefly prescribed in eczema and impetigo, in the acute stage and when an oozing discharge has taken place.

Drinks, acidulated with hydrochloric and nitric acids, are administered in a similar manner. The latter has also been extolled in secondary syphilis, in which, indeed, it has principally been recommended.

Acetic acid. *Lotions with Vinegar.*—Take equal parts of distilled vinegar and water; mix: a local application to the spots of

[a] Saponaria officinalis, soap-wort, an indigenous plant in the British islands, is not employed in regular practice in this country, but is highly thought of as a domestic remedy among the lower orders. In France it is an officinal plant, and its preparations are much used and esteemed as depuratives in diseases of the skin. The infusion is prepared by macerating for four hours an ounce and a half of the dried roots, bruised, and three drachms of liquorice root, in a pint of boiling water, expressing and decanting the clear liquor. The syrup of orange flowers may be substituted for the syrup of capillaire, as the latter is not kept in the shops here.—Ed.

purpura. *Ointment of La Charité for Tinea.*—Take of distilled vinegar, 150 parts; wheaten flour, 25 parts; black pitch and Burgundy pitch, of each 25 parts; melt the pitch, suspend the flour in the vinegar, previously heated, and mix. This preparation, spread on a piece of leather, and afterwards applied to the head, constituted the cruel treatment of the "*calotte*," for removing the hairs in this disease. Strips of diachylon plaster, to which melted ammoniacum has been added in the preparation, are now advantageously substituted for it. *Pomade.*—Take of pure acetic acid, by weight, two ounces; cold cream and olive oil, of each six ounces; mix by trituration. This ointment has been successfully employed in scabies.

Nitric acid. *Nitric acid lotion.*—Nitric acid, one part; distilled water, 96 parts; mix. Used as a lotion in scabies. *Pomade Oxygénée d'Alyon.*—Nitric acid, one part; lard, eight parts. In diseases of the skin, and especially in scabies, this pomade was formerly much thought of. It is now but little used.

Tannic acid (Tannin).—Tannin is a very powerful vegetable astringent; it acts in the same manner as tonics. It is advantageously employed in the treatment of leucorrhœa, blennorrhœa, and mercurial stomatitis. *Gargle.*—Tannin, half a drachm; infusion of roses, eight ounces; honey of roses, one ounce and a half: as a gargle in mercurial salivation. *Astringent Injection.*—Tannin, from fifteen to thirty grains; infusion of roses, eight ounces: in blennorhagia. *Vinous Injection of Tannin* (Ricord).—Port wine, four ounces; tannin, fifteen grains: in blennorrhagia in the male or female. Tannin has also been employed in the form of ointment to prevent falling out of the hair. *Pomade* (Stiège).—Butter of cacao[a], ten drachms; olive oil, five drachms; tannin, two drachms; sulphate of quina, one drachm; aromatic spirits of ammonia, two drachms; mix: a portion to be rubbed in night and morning in cases of alopecia. Tannin is one of the remedies I have found to succeed best, and which I consequently most frequently employ, in the treatment of *herpes tonsurans.* I usually adopt the following formula:—Tannin, fifteen grains; lard, one ounce; water, a sufficient quantity; mix: to be rubbed to the affected parts every evening. I generally direct the patient to wash the parts in the morning with an alkaline lotion (biborate of soda, half a drachm; distilled water, eight ounces). The proportion of tannin may be increased according to the age of the child, or in cases where the skin is not very irritable.

Aconite.—Aconite is exhibited internally with various indications, as a narcotic, sedative, sudorific, resolvent, diuretic, &c. It has been recommended as useful in a considerable number of dissimilar diseases; amongst others, it has been successfully employed in the treatment of secondary syphilitic affections. Biett prescribed it, either alone, or combined with a preparation of mercury, in the sequelæ of syphilis. He recommends the following pills:—Alcoho-

[a] The concrete oil expressed from the roasted and subsequently macerated seeds of the theobroma cacao or chocolate tree,—cocoa-nut oil.—Ed.

lic extract of aconite, half a drachm; powdered marsh-mallow root, as much as may be sufficient; mix, and make into forty-eight pills: one to be taken night and morning in syphilitic affections and in pains in the bones. I have latterly had recourse, and with success, to the sedative effects of aconite in the treatment of papular eruptions of the skin[a].

Alum.—Sulphate of alumina and potash is a useful astringent both in injections in blennorrhœa, and in lotions in freckles, in excoriations of the skin, and for chilblains. *Fuliginous Injection of Alum.*—Decoction of soot[b], sixteen ounces; alum, four scruples; water, six ounces; mix: in leucorrhœa (Soubeiran). *Injection for the Urethra* (Ricord).—Rose water, six ounces; alum, fifteen grains; mix. *Injection for the Vagina* (Ricord).—Water, thirty-two ounces; alum, thirty grains; mix. *Astringent Lotion* (Foy).—Sulphate of zinc, one drachm; alum, one drachm; plaintain water[c], sixteen ounces: against freckles and chilblains.

Starch is a white, inodorous, insipid substance, much employed in medicine as an analeptic and emollient. I am in the habit of using it in a great number of acute eruptions, as in lichen, herpes, impetigo, and acne. Starch may be employed negatively to replace lotions and ointments, which very often are badly borne. In a great number of cases, it will advantageously replace poultices of potatoes, which cannot always be long employed, and after the use of which it may be inconvenient to leave the skin exposed, without any protection, to the contact of the air. Lastly, starch is an efficacious means of allaying itching. In cases of pruritus of the scrotum, anus, groins, &c., whether without the previous use of lotions, or after having applied an alkaline or other solution, and having carefully and completely wiped away the moisture, it is very useful to dust the affected parts with a powder-puff charged with dry starch. In general, I make use of pure powdered starch; but, under some circumstances, I find it advantageous to combine with it white oxide of zinc, camphor, &c. *Starch Powder.*—White oxide of zinc, two drachms; powdered starch, four ounces; mix: to be sprinkled night and morning on surfaces affected with acute eczema, acne rosacea, impetigo, or herpes. Another form I employ is, white oxide of zinc, two drachms; camphor, half a drachm; powdered starch, four ounces; mix: to be sprinkled on the groins, the axillæ, or the genitals, in cases of prurigo.

Ammonia.—The volatile alkali and its compounds are, generally speaking, very active therapeutic agents, and are employed for various purposes. The carbonate has been successfully administered in certain forms of secondary syphilis. *Mixture de Perilhe.*—Take

[a] See Annales des Maladies de la Peau, vol. iii. p. 28.

[b] Wood soot, four ounces; boiling-water, a pint and a half; boil down to a pint and strain. (Neligan's Materia Medica, third edition, p. 35.)—Ed.

[c] Prepared by distilling four pounds of the fresh herb of plantain (plantago major) with a gallon of water, with a moderate heat, until half a gallon comes over; as it is but a very weak astringent, distilled water may be substituted.—Ed.

of balm (melissa officinalis[a]), four ounces; senna leaves, half an ounce; water, thirty-two ounces. Infuse, strain, and in eleven ounces of the strained infusion dissolve sugar, four ounces; carbonate of ammonia, one drachm. Half a wine-glassful to be given every six hours. In the same affections I have, with advantage, exhibited the following *ammoniacal mixture:*—Syrup of daphne mezereum, two ounces; syrup of tolu, four ounces; carbonate of ammonia, half an ounce; mix: a table-spoonful night and morning. Guided by analogy, I have latterly made use of the carbonate of ammonia in the treatment of cutaneous diseases, and have hitherto obtained favourable results from its employment in chronic eruptions. *Syrup of Carbonate of Ammonia.*—Carbonate of ammonia, half a drachm; compound syrup of sarsaparilla, six ounces; mix: from one to three table-spoonfuls daily in psoriasis and lepra vulgaris[b]. *Compound Mercurial Ointment.*—Take of mercurial ointment, one ounce; slaked lime, two drachms; muriate of ammonia, one drachm; sulphur, one drachm; mix. This ointment is employed in the hospital of Toulon, for the same purposes as mercurial ointment, in the treatment of syphilis. It has the advantage of staining the linen less, and of not exciting salivation. *Pomade de Gondret.*—Take suet and lard, of each one ounce, melt them in a wide-mouthed bottle, and add water of pure ammonia, two ounces; cork the bottle, and agitate briskly in cold water until the mixture has cooled. This blistering ointment has been successfully employed by Biett in the treatment of porrigo. *Ammoniacal Lotion.*—Take of water of pure ammonia, fifteen minims; decoction of bran, one pint; mix: as a wash in acne sebacea. This lotion has hitherto succeeded with me better than any other in this obstinate form of acne. Ammonia is also a very good topical application in the other varieties, and especially in the *acne indurata;* but in these it is better to dilute it with an aromatic infusion, as, for example, infusion of sage.

Ammoniacum.—Ammoniac is employed in the treatment of favus as a substitute for the old pitch-cap; its application is much less painful than that of the latter, and was first proposed by M. Evens. A plaster of ammoniacum, spread on linen, is prepared and applied in strips to the head, previously well cleaned and closely shaved, so as not only to cover but to extend somewhat beyond the affected surfaces. These strips are generally allowed to remain on for several weeks.

Anthrakokali[c] (Carburet of Potassium).—This preparation was some time ago highly recommended in the treatment of cutaneous diseases. It was given internally in the form of powder, but was

[a] The fresh leaves and tops are the parts employed.—Ed.

[b] See Annales des Maladies de la Peau, vol. iii. p. 315.

[c] Prepared by mixing five parts of Cannel coal in fine powder with seven of caustic potash while fused by heat. The mixture, on removal from the fire, is to be as quickly as possible reduced to powder, and without loss of time transferred to small, well-stopped bottles, in which it is to be preserved for use. (Codex Medicamentarius Hamburgensis, editio Altera, 1845.)—Ed.

chiefly used externally as a pomade. In powder, a grain and a half was administered, combined with five grains of powdered liquorice, three or four times a day; according to Jourdan, it produced copious perspiration. The ointment consisted of fifteen grains of anthrakokali mixed with an ounce of lard; it was used as an inunction in eczema. Anthrakokali is now obsolete.

ANTIMONY.—Several antimonial preparations constitute active remedies in the treatment of syphilis, and of many cutaneous diseases; the most prominent are the sulphuret and the golden sulphuret. *Sulphuret of Antimony* (crude antimony) is the active ingredient in certain ptisans, which have become celebrated, and which are often indeed very efficacious in chronic affections of the skin, and especially in bad forms of secondary syphilis; for example, in the old ptisan of Astruc, the ptisan of Vigaroux, and particularly in the ptisans of Pollini and of Feltz. *Pollini's Ptisan.*—Dried walnut-peel, two and a half ounces; sarsaparilla and China root, of each three drachms; crude antimony, six drachms; pumice-stone, three drachms; water, forty-eight ounces; boil down to one-half (Guibourt): half to be taken morning and evening, daily, for two, three, or four weeks. The most unexpected results have followed the use of this decoction. *Feltz's Ptisan.*—Sarsaparilla, two ounces; isinglass, two drachms and a half; sulphuret of antimony, two ounces and a half; water, sixty-four ounces; boil down to two-thirds: this ptisan, of which the dose is a glassful, is justly considered to be a valuable antisyphilitic. Many physicians consider that sulphuret of antimony owes its active properties to the arsenic it contains. M. Rayer has proposed to substitute the arseniate of soda (in the proportion of the eighth of a grain to the quart), for the sulphuret of antimony in Feltz's ptisan. M. Guibourt recommends arsenious acid as a substitute.—*Annales des Maladies de la Peau et de la Syphilis*, tom. iii. et iv.